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BRITISH MEDICAL JOURNAL

LONDON SATURDAY MAY 3 1941

INJURY AND INTERNAL DISEASE

BY

G. F. WALKER, M.D., M.R.C.P.

When a person alleges that a disease was brought on by injury truth may reside in one or other of the following:

TABLE I

(*a*) Injury may cause disease.
(*b*) Injury may precipitate disease.
(*c*) Injury may aggravate disease.
(*d*) Disease may promote injury (Ewing's "traumatic determinism").
(*e*) Injury may reveal disease.
(*f*) The association may be a pure coincidence.
(*g*) In post-traumatic debility and invalidism sundry maladies and degenerations may be installed.

In an assessment of any case certain minimal data must be forthcoming—namely:

TABLE II

(*a*) An authentic and tested statement of particulars of the injury.
(*b*) A full record of clinical chronology covering the pre-accident period, the injury, and the post-traumatic period.
(*c*) Accurate observation of all clinical phenomena, identification of the disease beyond all doubt, and a knowledge of the morbid processes at work.

With this framework we can first turn to the literature, and at once a few generalizations stand out:

TABLE III

(*a*) There is hardly any internal disease which has not by someone somewhere been attributed to injury.
(*b*) A very great deal of plagiarism and uncritical acceptance of authority has taken place.
(*c*) There is often a hopeless conflict of opinion between pathologists and clinicians.
(*d*) Many flimsy pieces of evidence have been copied from book to book for years.

Cancer

The first internal malady worthy of study is cancer, and here we are faced with conflicts of opinion. Briefly, three views can be found in the literature on the subject of injury causing cancer—namely: (1) Such an event is opposed to all known principles, but it may occasionally happen. (2) It not only may occasionally happen but in certain types of cancer it frequently does happen. (3) Wherever truth may lie between propositions 1 and 2, here, at least, is an authentic and well-tested case, or series of cases, without comment.

The main leaders of proposition 1 have been Phelps (1910), who, however, excluded sarcoma from his survey; Stephens (1928); Knox (1929), whose paper was an incisive and hostile counterblast to the writings of Coley; Mock and Ellis (1926); and more especially Ewing (1926, 1928).

As is well known, the chief exponent of proposition 2—namely, that injury is often associated causally with cancer—has always been Coley, who began his observations more than forty years ago. When Knox suggested that the protocols of Coley and others were nothing but a parcel of anecdotes and vague impressions Coley (1929) replied with the obvious retort that many authors make too great an effort to discredit the direct statements of intelligent patients. It is a fact that Coley's cases are always minutely described, and one often has a feeling that scepticism about his conclusions would be the very antithesis of science.

Class 3—namely, cases of post-traumatic cancer described by clinicians without comment—cause little difficulty. They are very scarce in medical literature as a whole. Among the best examples are those of Levy (1927) (sarcoma), Wainwright (1928) (carcinoma), Paul (1929) (rodent ulcer), Wells and Cannon (1930) (carcinoma of lung), Haler (1931) (sarcoma), Haler (1932) (sarcoma), Shaw (1935) (sarcoma), Willan (1930–1) (sarcoma).

The whole literature on cerebral tumour allegedly following injury was carefully reviewed by Marburg in 1934. The only possible conclusion from this typical pre-anschluss Viennese monograph is that head injury is extremely rare and unimportant as a cause of cerebral tumour. Parker and Kernohan (1931) found in a series of 431 cases of glioma of the brain that 58 (13.4%) reported injury as a cause. In a series of 431 patients without tumours of the brain there was a history of injury to the head in 45 (10.4%). In 200 normal persons 71 (35.5%) reported injury to the head. On further examining the 58 the history could be disregarded in all but 21—i.e., 5%.

Lastly, in the matter of comparative pathology it is very notable that Volume XCIII, 1931, of *Annals of Surgery*, which was devoted to an international study of cancer, contained little or nothing about acute traumatic malignancy. Slye (1931) recorded observation on seemingly very quarrelsome mice. Of 14,000 necropsies on these animals, 1,301 showed indisputable neoplastic growths. Of the 1,301, 51 arose under observation at the sites of recorded gross trauma sustained in fighting. Slye thought little of this, but believed more in heredity and gave good reasons.

Organic Nervous Disease

We can now pass to a consideration of organic nervous disease, exclusive of epilepsy and mental disorder, which will be dealt with later.

Here again three types of views are discernible in the very extensive literature—namely: (*a*) Trauma plays no part at all in the installation of organic nervous disease. (*b*) In certain cases trauma is the decisive precipitating factor. (*c*) Wherever truth may lie between *a* and *b*, here is a thought-provoking case.

The great authority of Kinnier Wilson (1923) stands behind proposition *a*. Addressing the American Medical Association at San Francisco in 1923, he expressed himself as hostile to the notion that trauma might initiate morbid neurological processes, especially progressive lesions. He denounced suggestions of the existence of traumatic cerebral tumour, but grudgingly admitted that a few cases of disseminated sclerosis and a very few cases of tabes and dementia paralytica might seem to be initiated by trauma. Very similar views have been expressed by Crouzon (1931), Jelliffe (1935), and many others of less standing.

There is a very rich seam of literature in support of proposition *b*—namely, that trauma may in certain cases initiate organic nervous disease. Harris (1933) quotes what he calls the "astounding difference" in the views given on the traumatic factor in progressive muscular atrophy in the second and the fourth editions of Price's *Textbook of Medicine*, and points out the fallacies of condemning the possibilities of trauma. He quotes his own cases in great detail, and these support proposition *b*. Harris sums up his personal experience as follows: "My own view is that when symptoms develop directly after an injury in a previously healthy individual we have no right whatever to assume that the injury has no causal connexion with the development of the disease." Very similar views were expressed by Hinds-Howell (1932) and Garland (1938).

Coming to proposition *c*—namely, simply recorded cases—we find the following: Jelliffe (1935) reported one case (not seen by him) of alleged traumatic amyotrophic lateral sclerosis together with some learned comments on contradictions and evasions by neurologists. The bulk of his paper is a summary recapitulation of 90 similar cases from the literature with comment such as "doubtful" or "too remote," but no substantial discussion. In another further study of alleged traumatic amyotrophic lateral sclerosis Waggoner and Löwenberg (1939) published a remarkable case of a patient exhibiting *both* amyotrophic lateral sclerosis due to natural causes and a traumatic syndrome resembling amyotrophic lateral sclerosis. Elkington (1936) examined and reported on 41 cases of meningitis serosa circumscripta. He believed trauma to be the cause in 9. As for progressive muscular atrophy, Sutton (1938) recorded one case on rather attenuated evidence, and Walker (1938) mentioned four cases, in only one of which the traumatic cause was accepted without question by the party liable to pay compensation. Turner (1939) made a very careful survey and concluded that trauma might initiate progressive muscular atrophy in a certain small proportion of cases.

There are on record any number of cases of Parkinsonism allegedly due to trauma, and among the best examples are: Pommé and Liégeois (1931), following head injury; Ramond (1935), following concussion; Weinberg (1939), 2 cases following electric shock; Patrick and Levy (1922), general review; Grimberg (1934), head injury; Kulkov (1932), head injury; Bruetsch and De Armond (1935), head injury; Faure-Beaulieu (1932), peripheral injury; Naville and de Morsier (1932), review of 42 cases following peripheral injury; Hodgson (1937), peripheral gunshot wound; Walker (1937), peripheral industrial accident.

There is one other disease which I have always thought nervous rather than "rheumatic." I mean chorea. In 1934 I found myself in possession of minute notes of 200 cases of chorea, personally observed. In these 200 I found 26 definitely initiated by physical injury such as a scald, lacerated scalp, injuries in a fire, severe caning, dog-bite, etc. (Walker, 1935).

Myocardial and Pericardial Lesions

A very learned monograph on myocardial and pericardial lesions alleged to follow non-penetrating trauma was written by Warburg of Copenhagen in 1938. It is very interesting to peruse the reviews of this little book. In England the *Lancet* (October 22, 1938) was friendly, noncommittal, and uninformative, while the *British Medical Journal* (November 12, 1938) was hostile, critical, and sceptical about Warburg's conclusions. On the other hand, the *Journal of the American Medical Association* (November 12, 1938) willingly accepted Warburg's conclusions that blunt non-penetrating trauma to the chest may indeed install myocardial disease. The subject has been reviewed in modern fashion by Barber (1940), whose notes and references set out a clear exposition. Case records especially worthy of study (in addition to those quoted by Barber) are those of Kahn and Kahn (1929); Kahn (1930); Levison (1927); and Elkin (1935). The case which is reported by Priest (1939) is an especially interesting and curious one. The paper by Hay and Jones (1927) purporting to show the installation of auricular fibrillation by trauma met with severe criticism in that many cardiologists in effect insisted that the cases did not fulfil the requirements laid down at the beginning of this paper (Table II).

The best recent review of coronary disease and angina following strain or inordinate exertion is that of Boas (1939), who showed the relationship clearly in an admirably careful survey of 14 cases.

Mental After-effects of Head Injury

A consideration of the mental after-effects include a review of the literature on traumatic epilepsy, late traumatic apoplexy, psychosis, and chronic subdural haemorrhage. These are here considered in turn:

Of traumatic epilepsy Stevenson (1931) wrote:

> "The term 'traumatic epilepsy' should be limited to cases of epilepsy resulting from injury to the brain or its membranes. The term 'Jacksonian epilepsy' should be applied only to localized fits of cortical origin. . . . Traumatic epilepsy may develop as late as ten years or more after severe injury of the head, but usually there has been in the interval vertigo, paroxysmal headache, or other premonitory symptoms. Epilepsy following superficial wounds of the head is most often psychogenetic in origin. . . . The fits in traumatic epilepsy are, in most cases, clinically the same as in idiopathic epilepsy. Both major and minor attacks occur. Vertigo and mental deterioration are both more common in traumatic epilepsy than in idiopathic."

Similar observations can be found in the writings of Symonds (1935), Turner (1923), Wagstaffe (1928), and Elvidge (1939). Finally, Foerster and Penfield (1930) stressed the part played by progressive intracerebral scar formation.

The very large amount of literature on late traumatic apoplexy has been ably surveyed by Symonds (1940).

The literature on mental disturbance following head injury is truly formidable. Most papers are modelled on that of Mickle (1892), who recognized as possible sequelae

to head injury: (*a*) psychoneurosis, such as automatism, stupor, melancholia; (*b*) paranoia; (*c*) organic disease, with dementia; (*d*) functional disturbance. At the B.M.A. Meeting at Cardiff in 1937 the mental effects of head injury formed a topic of important discussion. Mapother (1937) referred to the lack of unanimity among authorities and the different views held by civil and military experts. He quoted a series of 5,000 private patients, of whom 123, or possibly slightly fewer, owed mental disorder to head injury. Other speakers mentioned the following possibilities:

(*a*) Pre-existing mental instability disposes to gross hysterical manifestation after head injury.

(*b*) Persons of cyclothymic or manic-depressive mental constitution are prone to an attack of depressive psychosis after head injury.

(*c*) Subarachnoid haemorrhage must always be considered in cases of mental disorder following head injury. Similarly, cerebral oedema often plays a part.

(*d*) Much vague mental disorder after head injury could be prevented by clear, decisive, prompt, and positive clinical and legal handling of the patient.

(*e*) Howsoever they arise (and much is obscure) schizoid psychoses are common sequels to head injuries.

Of "chronic subdural haemorrhage" there is little to be said beyond what Trotter (1914) originally stated. He defined the illness as consisting of a relatively mild injury, a latent period, headache, drowsiness, and remarkable transitions between full consciousness and coma. A very good recent summary, well illustrated, is given by Fleming and Jones (1932) with details of 8 cases. Another review of 22 cases is that of Gardner (1935). Other literature of importance is: Pearson (1928), head injury in two boys (sequel in each case was a regression to the symptoms and behaviour of an illness each had had in infancy); Mock (1929), similar to Mapother; Le Fevre (1933), morbid anatomy; Hoch and Davidoff (1939), role of previous personality in the development of traumatic psychosis.

Injury to Bones and Joints

The best recent summaries of disease processes induced by injury in bones and joints were given by Buchman (1929) and Brailsford in 1936. The latter stated that he was familiar with localized rarefying osteitis or "osteochondritis" in 21 different sites, and said: "After carefully weighing the evidence obtained from over 100 cases personally observed, I am of the opinion that trauma is the exciting cause of these conditions, but in view of the fact that it is the minority only of the cases of trauma in which the sequence of characteristic changes develop, I feel that there must be some other contributory factor."

Two post-traumatic osseous maladies call for special mention. The first is osteochondritis dissecans, and it is quite noteworthy that König, who first described this in 1888, and Burr, who followed with a modern description in 1939, both thought that trauma was not solely responsible. However, Fairbank (1933), in a very careful survey, said he believed that osteochondritis dissecans of the knee (the usual site) was caused by trauma "pure and simple," and he explained the mechanism as violent rotation inwards of the tibia, driving the tibial spine against the inner condyle. Monteith (1934) published a remarkable case in close support of this. Funsten and Kinser (1936) reported a substantial series of cases showing the preponderating influence of trauma and the appearance of osteochondritis dissecans in sites other than the knee.

The second malady is post-traumatic osteoporosis, which, if accompanied by pain, swelling, and vasomotor disturbance, is sometimes called Sudeck's atrophy. Good accounts of this have been published by Gurd (1935)—24 cases beautifully illustrated; Leriche and Fontaine (1936a, 1936b)—16 cases, also beautifully illustrated; Middleton and Bruce (1934)—7 cases; Middleton (1937)—full clinical description; Beyer, 1938; and Simpson (1937)—a very obscure and unusual case of painless decalcification.

Diabetes Mellitus

Trauma and diabetes mellitus furnish a very rich and contradictory literature. I recently published a case (Walker, 1940) of diabetes mellitus which I thought was directly and solely due to injury. The whole of the literature, and all ideas hitherto expounded on this problem, were summed up in a very lengthy general survey written by Viggo Thomsen in 1938. The author minutely examined 81 cases hitherto published as "traumatic diabetes" and brought forward a large series of highly controlled observations on the changes in carbohydrate metabolism following accident in normal and glycosuric patients. He concluded a very just and erudite monograph with a denial that trauma could ever cause diabetes mellitus. This view had the honour of laudatory acceptance in an unusually long editorial leading article in the *Journal of the American Medical Association* of April 22, 1939, but there remain clinical problems and recorded cases which Thomsen leaves utterly unsolved. It is noteworthy that all Thomsen's work was done before the part played by the pituitary was fully realized. Pedrazzini (1939) expressed conviction that true diabetes mellitus may be precipitated by any kind of injury, and gave fair evidence.

Tuberculosis

The installation of tuberculosis by trauma may take one of four forms, according to May (1928). He recognized: (*a*) recrudescence of a pre-existing focal tuberculous lesion; (*b*) miliary tuberculosis following trauma at the site of a tuberculous focus; (*c*) tuberculosis arising at the site of an injury without history of previous tuberculous disease; and (*d*) phthisis after a non-thoracic injury. Very much more detailed and attractive propositions have been published by Oliver (1915), who gave four seemingly clear cases of post-traumatic phthisis; Tattersall (1922), who described two very convincing cases; Tattersall (1928), who surveyed 300 cases of phthisis, with an authentic history of provocative injury in 4; Stoichitza (1934), who gave an account of two cases of traumatic phthisis and himself described the evidence as "clear, precise, and irrefutable"; and Mayer (1935).

Other Conditions

Leukaemia.—Trauma as a cause of leukaemia has been described by Lewsen (1930), Weil and Bousser (1936), and more particularly by Olovson (1939), who reviewed all published cases and added two of his own. Olovson was disposed to think that trauma may well precipitate myeloid leukaemia in a person already disposed to it.

Appendicitis.—Trauma as a factor in acute appendicitis has been described by Ludington (1923), Behan (1927), and Bissell (1928). The cases described by the last-named are much more credible than the single case described by Ludington. Very lengthy reviews and commentaries were made by Fowler in 1938 and Grettoe in 1939. The conclusion from these five authors is that "it may occasionally happen." Recent cases of traumatic appendicitis include those of Burgess (1938), Rogers (1938), and Goodyear (1938). A great deal of correspondence followed these cases, and the *Journal of the American Medical Association* (June 4, 1938) gave the view, cautiously, that trauma may indeed provoke appendicitis, usually of a grave and fulminating type.

Gastro-duodenal Ulcer.—No paper of this type would be complete without reference to gastro-duodenal ulcer.

Although textbooks of medicine and surgery often mention trauma vaguely in discussing the cause of these maladies, no sets of authentic cases have recently been recorded. But in this connexion, as also in connexion with perforation, many authentic cases are on record in which the stomach has been ruptured by external violence without gross evidence thereof.

Pneumonia.—The possibility of trauma causing pneumonia is always mentioned in textbooks of medicine. It has been referred to over and over again in successive editions of Osler's *Principles and Practice of Medicine*. According to Brockbank (1926) the possibility was known to Morgagni. It was well known to Allbutt, according to his *System*. Several authors mention Litten's series and Stern's series, but I have not found these in the original. On the other hand, Rufus Cole of the Rockefeller Institute, according to his article in *Nelson's Loose Leaf System*, saw 700 successive cases of pneumonia without any trace of trauma at all.

Syphilis.—Trauma in a syphilitic may determine the site of syphilitic lesions in almost all organs of the body. Cases were given by Klauder (1922) as follows (all in proved syphilitics): gumma at the site of a laceration; gumma at site of repeated trauma; gumma of testicle after trauma; change of a negative Wassermann reaction to positive again as a result of trauma (2 cases); aneurysm developing suddenly after violent physical effort; delayed recovery from lacerations; paresis following head injury (3 cases).

At the beginning of this paper I mentioned that there is hardly any disease which has not at some time or other been attributed to trauma. A few case records deserve mention:

Sundt (1921). Trauma as a predominant agent in many cases of pseudo-coxalgia.

Platt (1922). Dissents from Sundt.

Vance (1923). Traumatic lesions of the intestine caused by non-penetrating blunt force.

Hartley (1923). Similar to Sundt.

Moersch (1926). 2 cases of diffuse cerebral gliosis seemingly caused by concussion.

Buchman (1928). Osteoporosis of the carpal bones. (Clinical descriptions not to be found elsewhere.)

Sargent and Greenfield (1929). Close relationship between cranial trauma and haemangiomatous cysts of the cerebellum.

Bolton (1929). Rupture of the stomach from external non-penetrating violence with no sign of external injury.

Chandler (1931). 11 cases of spondylolisthesis (in a series of 18) in which trauma seemed to initiate the symptoms.

Kendall (1931). Traumatic nephrolithiasis.

Mouat, Wilkie, and Harding (1931). Importance of injury in Kienböck's disease.

Capener (1932). 9 cases of spondylolisthesis (in a series of 34) giving a history of injury.

Royal Society of Medicine (1933). Traumatic Argyll Robertson pupil.

Chandler (1934). Bilateral suprarenal apoplexy due to trauma.

Dodd (1934), Gardiner (1935), Hunter (1935). Ruptured spleen after trivial mishaps.

Cooke (1934). Traumatic rupture of lungs without signs of trauma in the chest wall.

Bramwell (1934). Auricular fibrillation caused by head injury.

Fagge (1934). Fatal ulcerative colitis following head injury.

Edström (1936). Five cases of rheumatic fever beginning at or near an injured joint.

Hill (1936). Traumatic oedema.

Muller (1937). Post-traumatic renal stone (in colliery and street accidents).

Thomson (1938). Sudden post-traumatic senility.

Moritz and Wartman (1938). Four cases of post-traumatic internal hydrocephalus.

Meyerding and Pollock (1938). March fracture. (A very full and useful account of a malady now reappearing.)

Monteith (1938). Myositis ossificans with favourable course.

Bedell (1939). Traumatic retinal angiopathy (not necessarily head injury).

Fallon (1940). Lung injury in an intact thorax.

Findlay and MacCallum (1940). Recurrent traumatic herpes.

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REACTIONS AFTER TRANSFUSION OF STORED BLOOD

BY

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The transfusion of stored blood for many conditions has now become an established practice, and it may therefore be worth while to record some observations made on the incidence of reactions after its use.

Reliable statistics about reaction rates both from stored and from fresh blood transfusions are exceedingly difficult to obtain, mainly because there is little uniformity of opinion as to what constitutes a "reaction." Moreover, the reaction rate will vary with the person who carries out the transfusion, the method employed, the rate of administration, and the condition of the patient. Two disasters which cannot rightly be termed "reactions" but which may develop equally after the use of either fresh or stored blood result from an incomplete understanding of the technique of blood transfusion. They are: (1) pulmonary oedema with cardiac failure, due to overloading of the circulation of a patient whose heart is already embarrassed; and (2) renal failure due to transfusion of blood of an incompatible group. The more usual type of reaction that is apt to occur after a blood transfusion is a febrile reaction. It is unnecessary here to discuss the theories of the causes of such a reaction, although it is generally thought that the introduction of foreign protein into the blood stream plays an important part.

Reactions after Transfusion of Fresh Blood

The febrile reaction may be of variable severity. A simple rise of temperature without shivering or rigor is exceedingly common. Kordenat and Smithies (1925) maintain that nearly all transfusions of fresh blood are associated with some rise of temperature, even though this may be symptomless. Riddell (1939) is in agreement with this statement. Other observers believe that about 50% of fresh blood transfusions are associated with a rise of temperature or a rigor. A mere rise of temperature without constitutional effects is of little significance, but a rigor is more distressing and may even precipitate cardiac failure.

In considering the incidence of transfusion reactions, therefore, it is necessary that the reactions be divided into grades. The following classification is made by Riddell: *Grade I*, associated with a rise of temperature to 100° F., but no other objective features. *Grade II*, associated with a similar or greater rise of temperature and subjectively with feeling cold and shivery, but without having an actual rigor. *Grade III*, associated with a definite rigor. Riddell, giving his figures for his last 100 transfusions with fresh blood, noted rigors (Grade III reaction) in 11%. Fell (1938), analysing 500 cases, found reports of rigors in 4.8%. Edwards and Davie (1940) gave the following statistics of reactions after 100 consecutive transfusions of fresh citrated blood at the Liverpool Royal Infirmary: none, 37%; doubtful, 15%; Grade I, 15%; Grade II, 25%; Grade III, 8%. Grade III reactions are the most striking and easily recognized. Their average incidence in these three careful investigations on the use of fresh blood is 7.9%.

Reactions after Transfusion of Stored Blood

Edwards and Davie report that out of 1,364 bottles of stored blood administered by numerous surgeons in a variety of hospitals 69 (5%) gave rise to a Grade III reaction. These and other results with preserved blood, some of which are quoted by them, are tabulated below:

	No. of Transfusions	Grade III Reactions
Liverpool Royal Infirmary (Edwards and Davie, 1940)	1,364	5.0%
Milton Road Infirmary " "	—	4.0%
Walton Hospital " "	—	12.0%
Lundy, Tuohy, and Adams (1937)	149	4.2%
Cameron and Ferguson (1939)	1,000	2.8%
Elliott, Macfarlane, and Vaughan (1939)	50	8.0%
Hamilton-Paterson (1939)	46	6.0%
Biddle and Langley (1939)	150	5.0%
DeGowin and Hardin (1940)	1,458	3.9%
Brewer, Maizels, Oliver, and Vaughan (1940)	56	5.4%

The average incidence of Grade III reactions in all these transfusions with stored blood is 5.6%.

In order to determine the reaction rate and other results of the use of stored blood from the North-East London depot a label was attached to every bottle of blood sent out. This label consisted of a detachable reply-paid post-card which the medical officer who gave the transfusion was asked to fill in and return. Investigations suggest that in perhaps half of the transfusions carried out this request was complied with. The first 700 labels returned have been analysed, with the following results:

TABLE I.—*Results of Transfusion of 700 Bottles of Stored Blood. Average Age of Blood, 10.8 Days*

No. of transfusions ..	389	
Grade I reactions ..	44 (11.3%)	
" II " ..	17 (4.4%) } 8.5%	} = 19.8 per 100 transfusions
" III " ..	16 (4.1%) }	
Jaundice	6 cases	= 0.86%
Urticaria	4 cases	= 0.57%

Riddell's classification was slightly modified in that Grade I reactions were those in which any rise of temperature above 99° F. was reported but in which there was

no shivering or rigor. Grade II reactions included shivering attacks and mild chills. Grade III reactions were obvious rigors.

Thus the total incidence of Grade II and Grade III reactions was 8.5%, while marked rigors (Grade III reactions) occurred in only 4.1% of cases. These results compare favourably with those of the transfusion of fresh blood to which reference has already been made.

Because of the unreliability of statistics based on a comparatively small total number, and because of the uncertainty as to the proportion of labels that were returned after transfusions, each group of 100 labels was analysed separately, and it will be seen that the figures in each group are in fairly close agreement with each other (Table II). Each bottle contained 360 c.cm. of blood and 180 c.cm. of anticoagulant fluid (composed of 1.05% sodium citrate and 3% glucose in 0.85% sodium chloride solution). The Medical Research Council depots are now using a modification of this mixture (see M.R.C. War Memorandum No. 1, 1940).

TABLE II

Hundred Bottles:	First	Second	Third	Fourth
No. of transfusions	62	63	57	52
Grade I reactions	14.5%	14.3%	12.3%	7.7%
,, II ,,	1.6% } 6.4%	4.8% } 6.4%	5.3% } 8.8%	3.8% } 11.5%
,, III ,,	4.8%	1.6%	3.5%	7.7%
Total	20.9%	20.7%	21.1%	19.2%
Average age of blood	8.3 days	9.6 days	9 days	10.5 days

Hundred Bottles:	Fifth	Sixth	Seventh
No. of transfusions	52	49	54
Grade I reactions	11.5%	10.1%	7.4%
,, II ,,	5.8% } 5.8%	0 } 4.0%	9.3% } 16.7%
,, III ,,	0	4.0%	7.4%
Total	17.3%	14.1%	24.1%
Average age of blood	13.5 days	11.5 days	13.3 days

These findings bear out the opinion of other investigators such as Biddle and Langley, who state: "We are well satisfied that stored citrated blood produces no more complications than does fresh citrated blood, and the advantages of the former cannot be exaggerated." DeGowin and Hardin (1940) state that, in their experience, "no types of reaction were observed from the transfusion of preserved blood which were not already known to be associated with the use of fresh blood. . . . The incidence of various types of reaction did not increase or decrease with the period of storage of the blood mixtures."

In my own series 58 of the bottles of blood were 21 or more days old, but the average age of the blood causing Grade II reactions was 13.4 days, while the average age of the blood causing Grade III reactions was 12.7 days. Reactions were by no means confined to the older blood. Thus, shortly after receiving one bottle of 3-day-old blood one patient had a rigor for ten minutes with a sense of constriction in the chest and headache. On the other hand, two bottles of 21-day-old blood and one bottle of 28-day-old blood were given to another patient without any reactions developing. The oldest blood used consisted of two bottles that had been stored for 33 days. This was given to a patient with salpingitis and a urinary infection whose haemoglobin was 59%. There was no reaction or discomfort during the transfusion, but one hour afterwards she had a rigor. Her temperature fell to normal within forty-eight hours and remained so. There was no jaundice or other untoward reaction, and her haemoglobin had risen to 71% the day following the transfusion. Eight days after the transfusion she was given another bottle of blood—this time 28 days old. There was no rigor or discomfort on this occasion. Her temperature rose slightly (to 99.4° F.) in the evening, but the next day and thereafter it remained normal.

The 4 cases of urticaria resulted from transfusion of blood stored for 1 day, 3 days, 12 days, and 19 days. The six cases of jaundice, however, seemed to be the result of transfusion of somewhat older blood, since in all but one instance it had been stored for 14 or more days.

Red Cell Destruction

Since even fresh blood contains many aged erythrocytes, rapid destruction of these is to be expected after their transfusion. When stored blood is used the degree of destruction increases with the age of the blood. These facts have been demonstrated by Ashby's (1919) method of estimating cell survival after transfusion. Maizels and Hamilton-Paterson (1940) have found, however, that when the blood had been stored for 7 to 14 days more than 75% of the cells survived in the patients' blood stream after six days, and in some instances transfused cells were found months after transfusion. Mollison and Young (1940) found that when blood over 20 days old was transfused a great deal of destruction took place within a few hours of transfusion, although the time taken for the complete disappearance of the transfused cells was little less than that found for fresh blood.

It thus appears that the rapid initial fall in the number of transfused cells of stored blood is due to the destruction of effete corpuscles and that those that do not quickly succumb are relatively resistant to haemolysis. The early destruction of effete cells results in a transient increase in the bilirubin content of the patient's plasma and the presence of urobilin in the urine. If the amount of red cell destruction is excessive the patient may become jaundiced, but this is of very brief duration, since the excess of bilirubin is rapidly removed from the blood stream.

Using the preservative solution described it is found that most of the degenerative changes in the blood, other than the disintegration of the red cells, occur within the first two weeks of storage. Up to three weeks the amount of *in-vitro* haemolysis is negligible. The subsequent amount of haemolysis in previously undisturbed blood, estimated by the method described by Hudson (1940), was as follows:

TABLE III

Length of Storage	Average Haemolysis	No. of Bloods Examined
3 weeks	1.0%	9
4 ,,	2.9%	12
5 ,,	3.8%	13
6 ,,	8.1%	7

Further haemolysis is likely to occur when the stored blood is transfused into a patient, and this can be shown by pipetting off from a centrifuged specimen all the supernatant plasma and replacing it by isotonic saline or fresh normal serum. If this is gently mixed and allowed to stand or is centrifuged, considerable additional haemolysis is observed, and it is found on measurement to be more than that in the original plasma.

It is therefore important as a routine not to use blood preserved under present conditions for more than three weeks, since the haemolysis both *in vitro* and *in vivo* may result in transient jaundice and possibly be the cause of other reactions. Bushby, Kekwick, Marriott, and Whitby (1940) have proved that the increase in plasma bilirubin of the recipient is due not to free haemoglobin in the transfused specimen but to *in-vivo* haemolysis of transfused cells. Amberson (1937) concluded that haemoglobin is not toxic to vertebrates if it has been properly freed from stroma, and Duesberg (1934) has injected haemoglobin intravenously into man in amounts varying

from 2 to 6 grammes without ill effect. Hamilton Fairley (1940) has successfully injected considerably larger amounts after careful alkalinization of the urine.

It is therefore likely that the febrile reactions after transfusion of very old blood are due to products of red cell disruption and degeneration rather than to the mere presence of free haemoglobin in solution.

Though it is not relevant here to discuss the merits of various preservative solutions it is important to use mixtures that are most likely to prevent the early breakdown of the red cells. That haemolysis is impeded by the presence of glucose is now well known. Table IV shows the average haemolysis in five samples of blood, each preserved with and without glucose, over a period of six weeks.

TABLE IV.—*Comparison of Haemolysis with and without Glucose*

Weeks	With Glucose	Without Glucose
3	0.91%	4.99%
4	1.76%	13.24%
5	3.46%	24.75%
6	8.17%	37.4%

Blood preserved in solutions containing no glucose might therefore be expected to lead to a greater incidence of transfusion reactions owing to the additional *in-vitro* and *in-vivo* haemolysis, and this has been found to be so. Thus in the transfusion of fifty bottles of blood preserved without glucose the results of transfusion were as follows:

TABLE V.—*Fifty Bottles of Blood Preserved without Glucose. Average Age of Blood, 11.1 Days*

No. of transfusions	33	
Grade I reactions	18.2%	
„ II „	15.1%	27.2% = 45.5 per 100 transfusions
„ III „	12.1%	
Jaundice		1 case = 3%
Urticaria		1 case = 3%

The total number of bottles of non-glucose blood used is not large, but the reaction rate is considerably higher than in any group of 100 bottles of blood preserved with glucose.

Stored blood can never be better than fresh blood, but its ready availability is an immense advantage, particularly in an emergency, and this outweighs any slightly smaller rise of haemoglobin percentage in the recipient that may occur. The disadvantage of stored blood has been seen to resolve itself chiefly into the question of haemolysis, but with modifications of the preservative solution the life of the red cells can be further prolonged. Fortunately there is now less need to attempt to preserve emergency supplies of blood for long periods of time, since plasma or serum, capable of independent storage for many months, can be given as an emergency measure in place of whole blood in certain cases, when whole stored blood is not immediately available.

Conclusions

There is no significant difference in the nature or number of reactions which tend to occur after the transfusion of fresh blood and blood stored up to three weeks under standard M.R.C. conditions. Such difference as may occur seems to be in favour of stored blood.

When standard stored blood is used a febrile reaction is to be expected in about 20% of transfusions and an obvious rigor in about 5%.

The incidence of jaundice and febrile reactions tends to increase when blood more haemolysed than this is used. These reactions appear to be caused not so much by the free haemoglobin introduced as by the early disruption of effete red cells after transfusion.

Stored blood, as originally prepared, can safely be used for three weeks and in some cases for longer. Modifications of the preservative solution may further increase the useful life of the blood, though the introduction of preserved plasma and serum now renders this less necessary.

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CARRIERS OF TUBERCULOSIS

BY

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The fact that many infectious diseases may be contracted from contact with individuals who are not themselves suffering from any of those diseases at the time of contact is well known. Typhoid fever, scarlet fever, and some other streptococcal infections, cerebrospinal fever, diphtheria, and acute poliomyelitis are examples that come to mind at once, but there may be many other diseases which are spread in this way. The exanthemata and even the common cold, though usually contracted in epidemics from known sources, sometimes appear in a sporadic form which suggests the possibility of contact with a carrier.

Types of Carrier

Clinically there are two types of carrier—the known and the unsuspected. A known carrier has had the disease in question and has never been shown to become bacteriologically negative, although he no longer suffers in any way from the infection; in such a case the organisms appear to be saprophytic only. Carriers of this type are usually kept under observation until eventually the organisms are eradicated by some means or other; in any case they are a known danger and can therefore be controlled to some extent. The unsuspected type of carrier is much more dangerous, for his very existence may not be even suspected until extensive damage has been done. Such persons may have had their infection in an abortive or aberrant form, the true nature of which was not recognized at the time, or, more difficult still, they may never have had the disease in their lives so far as the most careful clinical investigation can discover.

In view of the great amount of work which has been done on the carrier problem it is surprising to note that little attention has apparently been paid to the possibility of the existence of carriers of tuberculosis. Of course it is well known that sufferers from chronic pulmonary tuberculosis may eject tubercle bacilli in the sputum for years, but a point often overlooked is that those who have

ceased to suffer from the complaint—i.e., patients whose disease has been classed as and is in fact "arrested"—may do the same thing, either continuously or at intervals. Such patients may be perfectly fit in the physical sense, and every possible test which can be applied to detect the presence of tuberculous toxaemia or of progressive change in the lungs may be negative. There may be no fever even on great exertion, the weight may be steady and satisfactory, there may be no sputum except when a cold or a mild bronchial infection causes slight expectoration, the sedimentation rate may be normal, and the radiographs may show very little damage or, at any rate, no appreciable change over a period of years. It is likely that many individuals who are quite unaware that there is anything at all wrong with their lungs may be coughing up tubercle bacilli from time to time; it is even possible that this also occurs in the case of some in whom no amount of investigation would reveal any trace of disease. The existence of cases in this latter group would be very difficult to prove, for it would mean the wholesale examination of the sputum, almost on a national scale. The fact that, even to-day, phthisis is being recognized as such for the first time in persons who have had cough and sputum for many months, or even for years, suggests that neither the public nor the medical profession are yet educated to the proper standard in the application of this simple test.

The subject of pulmonary tuberculosis is of particular and pressing interest at the present time, both because of the care which has to be taken in order to exclude cases with early disease from the Forces and because of the risk of spread of the infection which is likely to result from contact in air-raid shelters. Much has been written about mass radiography; this is certainly desirable, and the results already have been of considerable value. But it must be remembered that radiographs demonstrate shadows only, and that the information gained solely refers to anatomical change in the tissues. Infectiousness is an entirely different problem, but it is one which is even more important, for it concerns that part of the population which is still not infected, and not a particular individual. The only test of the infectivity of any person is the examination of the sputum. It is not suggested that mass sputum examinations should replace mass radiography, but it seems necessary to point out that these examinations are of immeasurably greater value if both are considered together, and that a complete observation should therefore always be made when looking for tubercle.

Danger of Apparently Healed Cases

The object of the present paper is to point out that apparently completely healed cases of tuberculosis may still constitute a danger to the public health, and to suggest that the disease may even be spread by contact with people who themselves appear to be perfectly normal. While the second part of this thesis is likely to be difficult to prove, four cases are reported in which the disease showed not the least sign of activity and yet the patients were certainly infectious from time to time.

Case 1.—A widow aged 65 came to the out-patient department of the Royal Chest Hospital in 1929 complaining that she had suffered from cough, a little sputum, and increasing shortness of breath for the past three winters. On examination she appeared to be a typical chronic bronchitic. The past history was most instructive. She had had eleven children, of whom no fewer than six had died in infancy from acute forms of tuberculosis. In addition two grandchildren had died from the same complaint. The sputum was negative for tubercle bacilli, but the radiograph showed several small calcified deposits in both upper lobes. On careful questioning she would not admit to any previous period of illness in her life. It seemed perfectly clear that this woman had suffered from tuberculosis in a subclinical form, and that she had been a menace to her family for a considerable period of time.

Case 2.—A retired business man aged 80 was seen in consultation in 1938. His complaint was that he had become rather wheezy during the last three years and found it difficult to manage a complete round of golf, although he was still capable of playing nine holes without undue fatigue. In his case a diagnosis of active tuberculosis had been made in 1888, and tubercle bacilli had been found in the sputum at intervals since that time, although he had led a normally active life. Tubercle bacilli were still present in 1938. On examination there was evidence of fibrosis in both upper lobes, and this was confirmed by radiograph; there was, however, not the least evidence of active disease, and one had the impression that the condition had been stationary for a long time, although it was not possible to prove this as the previous films were not available for comparison. There was, however, evidence that the patient had been coughing up bacilli for half a century, and his clinical state appeared to indicate that the disease had not been progressive for many years. This case illustrates the type of carrier who has made a clinical recovery from the disease but has never become bacteriologically free.

Case 3.—A nursing sister aged 35 complained of a slight cough. In 1929 her sputum was slightly stained on three occasions. No records are available of the condition at that time, but a right artificial pneumothorax was induced and was kept up for two years, when it had to be abandoned owing to obliterative pleurisy. Since that time she had been nursing in a sanatorium and had apparently been in good health. In January, 1940, there was again slight staining of the sputum following a cold, and re-examination showed the presence of a few tubercle bacilli. There were no abnormal signs in the chest, and the radiograph showed only a little thickening of the pleura overlying the right lower lobe, consistent with the old obliterative pleurisy. So far as could be determined the lung fields themselves were normal and a tomogram did not reveal anything further. Between January and July the sputum was found to contain tubercle bacilli on three occasions, although it was negative on several others. In April, 1940, she was admitted to the Royal National Sanatorium, Bournemouth, where the sputum was found to be positive on two occasions. She was not complaining of any symptom except a slight cough with a minimal amount of sputum; her general condition was excellent; there were no abnormal physical signs, the radiograph showed nothing beyond slight pleural thickening over the right lower zone, and the sedimentation rate was 4 mm. in one hour. After keeping the patient under observation for some weeks it seemed impossible to conclude that she was suffering from active tuberculosis as the term is generally understood, and the view was taken that she was in fact a carrier of the disease.

Case 4.—A single woman aged 25 came to the out-patient department of the Royal Chest Hospital in 1932 "for an overhaul." Her brother had died from pulmonary tuberculosis two months previously. The patient appeared to be in perfect health, and physical examination was entirely negative. A radiograph of the chest showed nothing abnormal, but the sputum was reported to contain tubercle bacilli on two occasions, although many other tests proved negative. This patient was kept under observation for two years, during which time her condition remained unchanged and she appeared to be in perfect health. The sputum tests were carefully carried out and there does not seem to be any reason to consider that they were not genuine.

Discussion

These four cases are recorded in order to stimulate further investigation into the infectivity of tuberculosis among members of what appears to be the normal population. Naturally the cases described have been chiefly those in which there had been some story of contact with the disease to account for tubercle bacilli being looked for. In none of them, at the time of examination, could it be said that the patient was suffering from active tuberculosis, yet three were infectious and the fourth had clearly

infected others in the past. The diagnosis of pulmonary tuberculosis rests upon a correlation of symptoms, signs, radiological appearances, and pathological tests. No single one of these can be regarded as sufficient in itself for an assured diagnosis. It appears certain that, without confirmation from these other sources, the presence of tubercle bacilli in the sputum cannot be regarded as proving the contention that there is active disease. In other words, the expectoration of tubercle bacilli may be consistent with clinical health for a long period of time, and persons so expectorating may well act as carriers of the disease. Although not illustrated in this series of cases, it is quite likely that some of the patients who harbour the bacilli in their respiratory tract in this way are liable to relapse and to sustain further spread of the infection in their lungs.

The fact that these cases are infectious is a matter of great importance from the public health point of view. Sometimes they are sent to a sanatorium; but sanatorium treatment is not likely to sterilize the respiratory tract, and actually we do not know of any measures that will render such a patient free from bacilli. Steps can be taken to make them as safe as possible by ensuring that they observe the same precautions as do other patients discharged from sanatorium with a positive sputum, the chief difference being that they can lead a normal life without restrictions.

Summary

This paper is not intended as a record of fresh observations, but rather as a presentation of known facts from a somewhat different angle. The object is to stimulate still further the search for the human sources of tuberculous infection, for it is only by their recognition and eventual elimination that the disease will be finally overcome. While it is well known that actively tuberculous patients are a present source of danger, it would help to emphasize the importance of the problem if those who, while clinically in perfect health, still cough up tubercle bacilli, either continuously or at intervals, were regarded as carriers of the disease from the point of view of the public health. Complete reliance on a negative radiograph may be misleading in some cases, and a more diligent search for tubercle bacilli in sputum would certainly yield valuable results.

Four cases are reported in which not the least sign of active tuberculosis was shown, but in which the patients were infectious from time to time.

The cases are discussed from the point of view of their danger to the public health.

As already announced, the Central Midwives Board for England and Wales has re-elected its chairman, Sir Comyns Berkeley. At the April meeting a letter was received from the Midwives' Institute stating that Miss A. A. I. Pollard felt unable to continue as a member of the Board after twenty years' service and that Miss C. K. Knott had been appointed in her place. The remaining members of the Board have been re-appointed. A resolution was passed by the Board expressing great regret at Miss Pollard's retirement and stating that she had devoted herself ungrudgingly to the service of the C.M.B. and of midwives for the past twenty years; in her the midwives of the country have had a representative who justly earned their affection and gratitude. "In championing the cause of midwives and of maternity and child welfare Miss Pollard has been aided by her wide and intimate knowledge of the midwifery profession and has been guided by her high regard for the dignity and responsibilities of that profession. Her enthusiasm for improvement has been tempered with wisdom and a shrewd appreciation of what was capable of early achievement. In all her dealings with her colleagues on the Board and with members of the profession she has displayed kindliness, sympathy, and a noble honesty of mind and purpose. It is a source of gratification to the Board that Miss Pollard has already seen success crown many of the movements she supported."

PELVIC ABSCESSES: DIAGNOSIS AND TREATMENT

BY

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There are few operations more satisfying to patient and surgeon alike than that of draining a pelvic abscess through the rectum. Collections of pus in the pouch of Douglas in the female and in the recto-vesical pouch in the male occur after any septic abdominal operation, but especially after a perforated appendix; less often they follow a perforated peptic ulcer, salpingitis, or suppurative diverticulitis. In a general surgical practice I meet about four cases a year; three will be caused by suppurative appendicitis with peritonitis, whilst the fourth will follow something less common. A recent instance developed after a partial gastrectomy for a huge gastric ulcer which was resected from the pancreas. An undetected pelvic abscess is one reason for a septic peritonitis not responding to sulphapyridine.

Diagnosis

The diagnosis of a pelvic abscess is straightforward. It is based mainly on the physical signs, for the symptoms as such seldom direct attention to the rectum. The story is approximately as follows:

After an abdominal operation the chart shows a raised pulse and temperature for about a week, then after two or three days of normal readings there is a return of the elevated pulse and of pyrexia to around 100° F. with a tendency to swing. The respirations throughout are unaffected, which negatives the possibility of a subphrenic abscess or respiratory sepsis. In a few days frequency of the bowels is noticed—perhaps four to six times a day. This is regarded as satisfactory at first, for it has often been preceded by constipation. Less often the bowels remain inactive. The stools consist mainly of mucus and a little fluid faeces. The patient is toxic, with colour pale or slightly grey, and the initial progress is obviously slowed down. The hand will be found coolish, the nails white instead of pink, and the pulse is small. The tongue is moist, smooth or shiny, and bright red, and the papillae have been shed; there is an exfoliative glossitis. It is interesting to watch this tongue condition recover when the pus has been drained: the whole of it may be affected, or occasionally only the tip or sides.

The abdomen is inclined to be tight, and to be full in the lower half, and the respiratory excursion is absent or even reversed—i.e., it is indrawn on inspiration instead of moving outwards. There is seldom abdominal tenderness or rigidity. In a thin patient visible peristalsis may be observed, raising the possibility of subacute intestinal obstruction; rarely a patient vomits, further strengthening this suspicion, but if there is the possibility of "pus somewhere" it must be sought out before considering intestinal obstruction, apart from an inflammatory paralysis of the bowel.

The diagnosis is clinched by inserting a finger into the rectum. According to the stage of development of the pelvic abscess when the examination is made, one of three states will be found. They are:

1. *The Early and Suspect Stage.*—The rectum will be found empty, dilated, and warm, and the mucous membrane is smoother than usual. The rectal wall at the tip of the finger is hard and unyielding, with induration. There is no fluctuation, and the impression formed is that the rectum is "set in felt."

2. *The Abscess Declared.*—A day or two later than the above, the findings will be the same except for a significant addition: at the tip of the finger, on the anterior wall, a dimpling spot will be discernible. This is the first sign of the rectal wall softening and the abscess pointing through it. The sensation to the pulp of the finger is almost identical with that experienced on palpating the tip of the nose—i.e., there is a soft spot between the two cartilages. It will be remembered that the reflection of the peritoneum is fully a finger's length away from the anus, so that in the early stages it is necessary to press up firmly to reach high enough, and that the finger will have to pass round the first fold of mucous membrane in the rectal wall; thus the examination is a painful one for the patient. I prefer to make it with the subject in the Fowler position and the knees wide apart. The dimpling spot having been detected, the time for operation has arrived, and this is the place through which to drain the abscess.

3. *The Abscess Obvious.*—The further development is when the rectal mucous membrane becomes oedematous and hot, the first valve of the rectum is obliterated, and there is an obvious bulging protrusion into the lumen. The tense bulge is so definite that fluid pointing into the bowel is undoubted.

The Abscess Ruptures.—A fourth stage, which should rarely occur, is that of a spontaneous evacuation of pus into the rectum, and this is passed into the bed-pan as a fluid stool. The abscess should be detected clinically before this.

An "Unusual" Presentation.—When the abscess points into the rectum from the peritoneal cavity it must traverse the pelvic cellular tissue. This usually becomes so indurated that spread along this plane is automatically limited. Rarely, however, in a debilitated patient the localization is not complete, and pus may break outwards and downwards through the sacro-sciatic foramen and point as an abscess on either buttock. The process is a quick one, and constant vigilance should be maintained to detect such a collection in a patient who is not progressing and who obviously has "pus somewhere." Another possibility is the abscess pointing in the groin at the pubic spine, having tracked along the round ligament or the vas deferens.

Vaginal Abscesses.—Pelvic abscesses also discharge through the vaginal fornices, but are rare in my experience, having seen only two in eighteen years of general surgical practice.

Opening a Pelvic Abscess

It is inadvisable to attempt the operation in bed. The patient is taken to the theatre and placed in the lithotomy position. The buttocks are elevated on a sandbag and protrude over the end of the operating table. This position is carefully arranged before the anaesthetic is given. Some surgeons perform the operation without an anaesthetic, with the patient in the knee-elbow position. Since the patient is already weak and toxic, as little anaesthetic as possible is given. A whiff of gas-and-oxygen or 3 to 6 c.cm. of 5% pentothal intravenously meets the need adequately.

The Operation.—The anus is dilated to admit two fingers, using plenty of lubricant. Tearing of the mucous membrane must be avoided: such fissures would be infected. A Sims duckbill speculum is inserted into the rectum, and the lumen is thoroughly cleansed of faeces and wiped out with antiseptic swabs. The dimpling or fluctuating spot on the anterior wall is located with the tip of the left index finger, and with this as a guide a long wide-bore needle attached to a 20-c.cm. syringe is confidently thrust through the suspicious area in the rectal wall. A hesitant penetration will fail to enter the abscess cavity. Aspiration will reveal the pus. If pus is not found, carefully check that the needle has been inserted through the softening place and that it has really penetrated the rectal wall. If no pus appears then the operation is not proceeded with, and observation on alternate days is maintained. When pus is found the syringe and needle are carefully held in position. A pair of uterine dressing forceps whose points are grooved on the inside are slid along the needle through the rectal wall and into the abscess cavity. Pus immediately emerges, often surprisingly fetid and in large quantities. As the flow shows, the syringe and needles are withdrawn and the forceps blades are opened in a north-and-south and then an east-and-west direction, thus making the opening in the rectal wall generous. In the early cases I used a large pair of Mayo scissors to open these abscesses. In one case a haemorrhage began which exsanguinated the patient and made a second operation necessary two hours later, followed by transfusion. It was surmised that the rectal wall, with a large vessel, was cut during the process of closing the scissors whilst turning them from north and south to east and west. Since then the uterine dressing forceps have always been used. They are more suitable, and no complication has been encountered.

The Drainage Tube.—The drainage tube is inserted through the anus and into the opening in the rectal wall; a stitch through the perianal skin anchors it for forty-eight hours, when it is removed and not replaced. A compress of perchloride of mercury 1 in 1,000 is applied externally and changed morning and evening.

After-treatment and Progress

The after-treatment is simple. The patient is nursed in the full Fowler position. On the day of operation only water is given, by mouth; the next day fruit drinks; citrated milk is added the day afterwards, and full milk and all fluids after this. At least six pints must be taken daily. So often a fluid diet is synonymous with starvation, and it is important to feed these patients adequately. The diet is steadily built up through semi-solids to one of fish and chicken.

The subsidence of the pulse, temperature, fullness of the abdomen, and general malaise is prompt and progressive. In only one patient have I seen a failure of resolution, when a pelvic collection of pus required draining three times. On each occasion the temperature and pulse fell for five or six days and then began to swing again.

No deaths have been seen after a drained pelvic abscess, but missed ones have been found at necropsy.

Summary

The clinical picture and treatment of intraperitoneal pelvic abscess following abdominal operations are detailed. A specially modified pair of uterine dressing forceps for opening the abscess are described. All instruments used in the operation must be long-handled, for the procedure is conducted through a narrow opening of some depth.

The annual general meeting of the Governors of the Imperial Cancer Research Fund was held at the Royal College of Surgeons on April 16, with Prof. H. R. Dean, Vice-Chairman of the Council, in the chair. The thirty-eighth annual report of the Fund was approved. [The report was summarized in the *Journal* of April 26, p. 639.] The Rt. Hon. Viscount Halifax was re-elected President for the year 1941–2, and Sir Holburt Waring, Bt., was re-elected Honorary Treasurer. Sir Cuthbert Wallace, Bt., was elected a member of the Council as a representative of the Board of Governors. The meeting passed a resolution of regret at the resignation of Sir Humphry Rolleston, Bt., who had been Chairman of the Council since 1924; he is now a Vice-President of the Fund.

A CASE OF AGRANULOCYTOSIS IN AN INFANT: RECOVERY

BY

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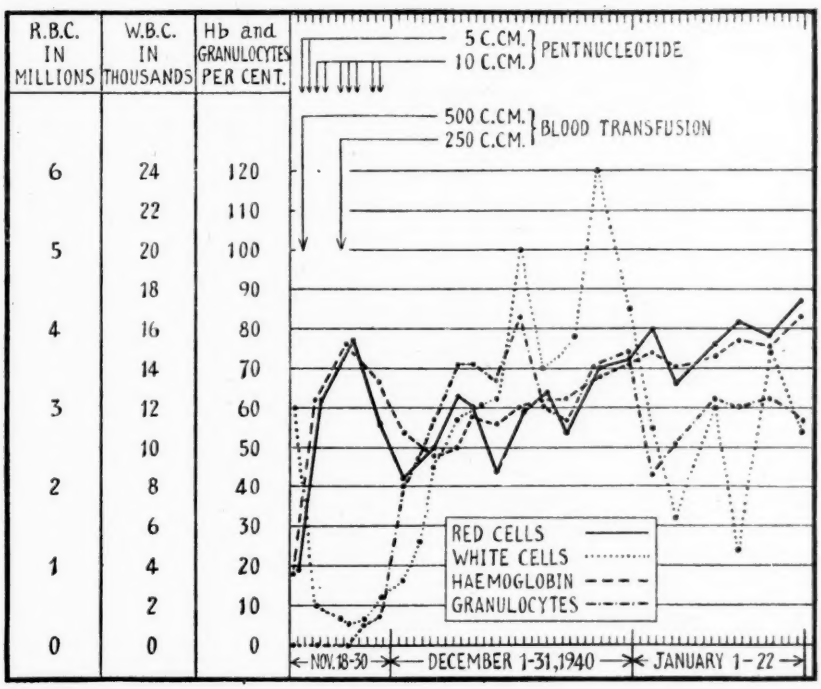
The following case appears to warrant record because of its severity and the part played by blood transfusion and pentnucleotide in recovery.

Case Report

A girl aged 1 year and 11 months was admitted to hospital on November 16, 1940, obviously very ill. Dr. J. S. Topping, her doctor, gives the following account of her illness.

She was seen first on October 25, 1940. She was pale, seemed ill, and would not put any weight on the left leg: she appeared to have pain in the left knee. She was put to bed, the left leg was wrapped in wool, and she was given 7½ grains of sodium salicylate with 15 grains of sodium bicarbonate every four hours. On October 28 the temperature was 100° and the pulse 90, and she seemed better. Up to November 1 the temperature and pulse remained the same, but the leg was better and she could stand on it. On November 4 she began to have bouts of crying and kept putting her hand to her right ear; there was some congestion of the fauces and the right ear-drum was inflamed. The temperature was 101° and the pulse 100. For the next few days the bouts continued, and she was seen by an aural surgeon, Mr. J. J. Rainforth, who reported that there was no evidence of mastoiditis and advised sulphapyridine (M & B 693). During the whole of this part of the illness no other physical signs of disease were observed; in particular there was no enlargement of glands nor was the spleen to be felt. On November 11 she was given 0.125 gramme of sulphapyridine twice a day, and this was continued for five days, making a total of 1¼ grammes. The ear symptoms ceased, but she seemed so ill that she was sent to hospital.



On admission she was profoundly anaemic. Examination of the blood showed only 930,000 red cells per c.mm., and the haemoglobin was down to 18%. White cells were 12,000 per c.mm., with a differential count showing 5% large lymphocytes, 2% lymphoblasts, 93% small lymphocytes; no granulocytes could be found. She was poorly nourished, but apart from the extreme anaemia there was no evidence of disease in any organs. There was no ulceration of the mouth, fauces, or tonsils; neither the spleen nor the glands were enlarged, nor were they ever found to be enlarged during the whole course of her illness. The temperature for the first four days after admission ranged between 101° and normal; after then it ranged between 103° and 100° from November 20 to December 3, when it subsided by lysis and was normal on December 9. There was no obvious cause for the fever except the septic condition in the arms, at the sites of the blood transfusions. At one time there was a little bronchitis. The pulse ranged between 135 and 155.

On November 19 the patient received a transfusion of 500 c.cm. of citrated blood by the drip method and an intramuscular injection of 5 c.cm. of pentnucleotide. Her general condition improved immensely almost at once, but no granulocytes were to be found in the blood. The pentnucleotide was given twice a day for the following ten days and she had a further blood transfusion of 250 c.cm. on November 24.

The accompanying graph is a record of the blood picture from November 18, 1940, to January 22, 1941. It shows the rapid rise in the red cells and haemoglobin after the first blood transfusion. From November 18 to 25, after prolonged search, but not a single polymorph could be found in the blood films, although the pentnucleotide was being given regularly; and it was not until fourteen doses had been taken that any appeared, and then there was a rapid rise to 40% fourteen days after the pentnucleotide had been begun. This rise steadily continued until a maximum of 83% was reached on December 17; after that there was a decline to normal. The number of white cells showed a remarkable fluctuation: from 12,000 on admission they fell rapidly to as low as 1,000 seven days later, after which they rose steadily to 12,000 by December 12; and, later, two counts of 20,000 and 24,000 were registered when sepsis was most marked in the transfusion wounds.

The general appearance of the child was remarkably improved after the first transfusion; but for a month she was listless and fretful, was difficult to feed, and showed a pronounced hypotonia. The sites of transfusion at the elbows became septic and sloughs appeared, and there was a complete agranulocytosis. The outlook seemed grave, but as soon as polymorphs began to be present the wounds became more healthy and slowly healed. A week after the second transfusion she became slightly jaundiced, but this cleared up in five days. In the beginning of January an indurated swelling appeared in the right buttock at the site of one of the injections of pentnucleotide; this was absorbed in ten days. During the last three weeks in hospital she steadily improved, and eventually could run about, took food well, and was happy and contented. A short course of light treatment seemed to help. She was discharged from hospital on February 1.

Commentary

At first the blood picture seemed to suggest an aleukaemic lymphatic leukaemia, but the progress of the case negatived any form of leukaemia. For several days, in spite of the most careful search, not a granulocyte could be found, and yet there were never any signs of throat infection. There is evidence that the child was anaemic before the sulphapyridine was given, and this condition, with a possible idiosyncrasy for the drug, may have so poisoned the marrow that it failed to produce any granulocytes. When the wounds at the elbows became septic it was feared that the infection would spread owing to lack of resistance. It was most noticeable how quickly the sores began to heal as soon as the polymorphs appeared. It is to be noted that after the transfusion the number of

red cells and the percentage of haemoglobin greatly increased, but there was no improvement in the white cell count—rather the reverse. Another point to note is that the pentnucleotide was given for eight days before the polymorphs began to appear.

I am indebted to Mr. W. Chandler for the very careful blood counts.

Clinical Memoranda

Fatal Case of Burns Complicated by Gas Gangrene and Acute Duodenal Ulceration

The occurrence of two of the rarer complications of burns in the following case makes it worthy of note.

CASE RECORD

A man aged 60 incurred extensive third- and fourth-degree burns of the left leg and thigh owing to the scattering of the coals from his grate through a bomb explosion. The burns were cleansed under general anaesthesia, and tannic acid was applied. Two days later he was transferred to an emergency hospital. On the fourth day the general and local condition were satisfactory. At 11 a.m. on the fifth day gas and fluid were present in the calf of the leg. The pulse was 100 and the temperature 99°. One gramme of sulphapyridine (M & B 693) was injected intravenously. By 2 p.m., the time arranged for operation, the gas had spread to the mid-thigh. All muscle groups were invaded. A circular amputation 4 inches below the hip-joint was performed and the stump was covered with sulphanilamide powder. A further 1 gramme of sulphapyridine was injected intravenously. From the fifth to the eleventh day the patient was given 15 grammes of sulphapyridine orally and 5 grammes of prontosil album, the latter preparation being retained after the former had caused vomiting. 7.2 c.cm. of anti-gas-gangrene serum was also given. On the twelfth day his general condition was fair. The temperature was normal and the pulse 80. The stump was fairly clean, and there was no gas in the limb. Severe melaena developed on the sixteenth day and continued until his death nineteen days after the burns were incurred. Repeated blood transfusions had been given.

Swabs and a portion of muscle were examined on the day of operation. A film showed debris and Gram-positive bacilli. Anaerobic culture revealed large Gram-positive bacilli with subterminal spores and *B. pyocyaneus*, and demonstrated Gram-positive bacilli forming a stormy clot in milk—? *B. welchii*.

At necropsy an ulcer the size of a shilling was seen on the anterior wall of the first part of the duodenum. The second and third portions were moderately injected. There was old blood clot in the bowel. The stump was clean. There were no other pathological changes.

Microscopical examination revealed disintegrating mucosa. The surface epithelium had been shed, but glands were present in the submucosa. On the surface there was a suggestion of a serous exudate, with some round-celled infiltration. No evidence of fibrous tissue formation was observed, nor was there any other sign of chronic inflammation. The general appearances suggested some acute necrotic process.

This case and a similar one occurring previously have impressed upon me the importance of examining all cases of burns daily for gas infection. The rapidity of spread in the subcutaneous tissue—about eighteen inches in three hours—is remarkable. Whether the same rate of spread occurred in the muscles it is more difficult to assess.

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Reviews

OFFICIAL HISTORY OF THE A.A.M.S.

The Australian Army Medical Services in the War of 1914–18. Vol. II. The Official History of the Australian Army Medical Service in the War 1914–18. The Western Front. By Colonel A. G. Butler, D.S.O., V.D., M.B., Ch.B. (Pp. 1,010; 212 illustrations, maps and graphs. 21s.) Canberra: Australian War Memorial. 1940.

The second volume of the story of the services of the A.A.M.C. in the last war is a worthy successor of the former one, which received our favourable comments. Colonel A. G. Butler, the editor, has taken a liberal view of his functions and has again given a fascinating story of the relation of the medical services to the fighting, this time on the Western Front, from the arrival of the Australians early in 1916, when the line had become fixed and trench warfare extended from the Belgian coast to the Swiss border, through the stage of attrition when heavy losses were suffered and a great number of casualties were caused by the attempts to batter the opposing lines, to the terminal war of movement, attack and counter-attack, which ended in the defeat of the German armies. The narrative chapters are followed by considerations of the special medical problems involved in each of these phases, and the administrative problems of the treatment and evacuation of lightly and severely wounded from France to the advanced base in the United Kingdom and ultimately to Australia. Changing problems required changed methods of tackling them, and high praise is given to the first Director of Australian Medical Services, Sir Neville Howse, and his staff for the way in which these problems were successfully solved. Details of surgical and medical treatment are naturally omitted, but a full discussion of the machinery of prevention of disease is given.

Colonel Butler is well qualified for the task he has carried through so successfully, because he saw service in the field as regimental medical officer, as commanding officer of a field ambulance, and as a member of the Corps staff. He has drawn his material from many sources, ranging from personal diaries and letters, written while the events described were shaping themselves, to the official medical histories of our allies and our enemies. The extracts made are apposite, illuminating the point under discussion, never redundant, and under the editor's skilled hand fitting aptly into the picture. It is interesting to trace the evolution of methods of evacuating the wounded under varying conditions of fighting on the Western Front and as experience grew. In this connexion reference is made to the distinguished service of Major-General G. W. Barber, D.D.M.S., Australian Corps, and his standing orders for the A.A.M.C. under his command are set out in full in an appendix. A special problem was that Great Britain was really an advanced base, and full tribute is paid to the work of Colonel D. M. McWhae in organizing the A.I.F. depots in the United Kingdom and dealing with the ultimate return of sick and wounded men to Australia. Throughout the volume the name of Sir Neville Howse recurs constantly, and the last chapter deals with the personality, policy, and outlook of the D.M.S., A.I.F., who wielded such power in the Australian Medical Services. It is a shrewd and well-informed appreciation of a great Australian.

Colonel Butler has produced a treatise rather than a history, and is to be congratulated on a valuable contribution to medical war literature of interest to many outside Australia. The print is clear, the illustrations (photographs, maps, diagrams, and sketches) are well chosen and

well produced. There is a comprehensive index, personal and general, and cross-references and notes are full and well arranged.

TEACHING THE DEAF CHILD TO SPEAK

Speech Training for the Deaf Child. By Sylvian M. Martin. With a foreword by W. Kingdon Ward. (Pp. 114. Cloth, 5s.; paper, 3s. 6d.) London: George Allen and Unwin, Ltd.

The situation of the deaf child is one of grave handicap at any time, and difficulties of transport must increase this seriously in time of war, for the special schools and clinics are not numerous. It is important, too, that the teaching of the child should begin as soon as the deafness is recognized, and also that the child should be taught in the right way. *Speech Training for the Deaf Child,* by Sylvian M. Martin, is a guide for mothers or relatives who may have to undertake the task of teaching a deaf child to speak. In concise and clear writing it is explained how this should be done, how the initial difficulties can be overcome, and how the training can be developed. The patience required to make the first contact with the mind of the deaf child by means of speech is emphasized repeatedly, and the teacher is encouraged by the assurance that often the child is absorbing quietly under an appearance of indifference, until it suddenly shows interest and responds.

The book is in two parts, the first dealing with the training of the deaf-mute child, and the second with the slightly deaf child. The explanations and examples of how the training should proceed are most thorough, and if they could be put into practice would enable the parent to teach the child so that the power of clear and intelligible speech is acquired. Anyone who has seen the patience, enthusiasm, and understanding which the skilled and trained teacher brings to her task must feel some doubt whether the parent can accomplish very much from the directions on the printed page, excellent as they are. If, however, circumstances are such that it must be done that way this little book by Miss Martin is an excellent guide and would be difficult to improve.

MANAGEMENT OF FRACTURES

A Complete Outline of Fractures (including Fractures of the Skull): For Students and Practitioners. By J. Grant Bonnin, M.B., B.S., F.R.C.S., M.R.C.O.G. (Pp. 508; illustrated. 25s. net.) London: William Heinemann (Medical Books), Ltd. 1941.

Of late several comprehensive works on fractures have appeared, perhaps as a reaction to the importance of the subject at the present juncture. The book under review is an addition whose form and content may be considered to justify its entering the field. Mr. Bonnin has managed to include a consideration of the whole subject within some 500 pages of a compact volume. In addition there are two short chapters on dislocations. There is nothing original in his approach to the various problems involved in the subject, but he gives a clear statement of the most recent views in those sections in which progress or change can be recorded during the past five or ten years. The essentially practical nature of the subject is clearly recognized, and the illustrations are mostly useful and assist in the clarification of the text.

The chapter on plaster technique is excellent and contains some commonsense observations on the dangers of unpadded casts. The author has not been frightened by the specialization devoted nowadays to head injuries and has produced a chapter on the subject which should fully serve the surgeon dealing with casualties. Acute traumatic bone atrophy receives some notice, but the author gives little intimation of the appearance of the condition elsewhere than in the hand. Admittedly the pathology of this condition remains obscure, but it is by no means rare in the lower extremity and in isolated long bones. The prognosis in these areas is better than is suggested in the volume under review.

The least convincing section is that on compound fractures. The author does not define clearly the limit of skin excision desirable in the operative treatment of these cases. He advocates the use of a window in the plaster over the wound—a practice which has little support in most circles at the present time. Again, his enthusiasm for primary suture will not be shared by all surgeons. It is perhaps unfair to make these criticisms of a textbook; the subject of wound treatment looms so large at the present time, and individual opinions on the subject are so firmly held, that close conformity of opinion on the subject is hardly to be expected. The absence of a definite recommendation in regard to the use of the sulphonamide group of drugs in prophylaxis and a somewhat sketchy paragraph on gas gangrene are subject to the above observations.

There is a suggestion in the introduction that the book is mainly designed for the use of students. It will certainly serve them well, but it also offers a sound working guide to those surgeons who are now perhaps unexpectedly concerned with the treatment of injuries.

PRACTICAL DIETETICS

Dietetics Simplified. The Use of Foods in Health and Disease. By L. Jean Bogert, Ph.D. With Laboratory Section by Mame T. Porter, M.A. Second edition. (Pp. 742. 12s. 6d. net.) New York and London: The Macmillan Company. 1940.

The best way to review a book is to use it, and as one who has made considerable use of the first edition of Bogert and Porter the reviewer can say that it is an extremely useful and practical manual of dietetics. The second edition maintains the virtues of the first, among which we may enumerate attractive format and illustrations, adequate but not excessive physiological and clinical details, and clearly described diet schemes and recipes. Each chapter is followed by "Discussion Questions and Problems," and though the book has been planned for nurses and medical students, as well as others interested in dietetics, we cannot help feeling that the average graduate in medicine in this country would fail on these quizzes. And this, it seems to us, reflects not so much the high ideals of educative practice in the U.S.A. as the distortion of the British medical curriculum. A recent analysis of the bed costs in a provincial teaching hospital showed that nearly three times as much per patient was spent on provisions as on drugs and surgical materials. Yet, whereas the student receives extensive instruction in the action and prescription of drugs and the dressing of wounds and fractures, he receives practically none in dietetics. Every layman knows that drugs and operations are of little value in the chronic diseases which vex mankind, such as rheumatism, chest diseases, dyspepsia, and psychoneurosis, but though the medical profession pays lip service to such ideas as prophylaxis, physiotherapy, mental healing, and improved nutrition, no corresponding revolution has occurred in the curriculum. The average faculty of medicine acts on the belief that what was good enough for Astley Cooper, Bright, and Addison is good enough for to-day. It is difficult to see how this excessive conservatism can be overcome without strong pressure from without, but books on dietetics so attractively written and produced as Bogert and Porter cannot fail to exert an influence for improvement.

Notes on Books

Clinical Pellagra, by Prof. SEALE HARRIS of Alabama, is a work of collaboration in which ten other people have taken part. Prof. E. V. McCollum, in a brief foreword, describes it as a "philosophic treatment of clinical and experimental data of many kinds, contributed by many able workers who have contributed to the development of our knowledge of the biochemistry of nutrition and of the biologic agencies which act in conjunction with malnutritional states to undermine and pervert physiologic functions of certain types." It is not until Chapters 18 and 19 are reached that the editor-in-chief gives his description of the symptomatology and clinical manifestations of pellagra, and the general presentation lacks sequence. This book, of nearly 500 pages with many illustrations, is published by Henry Kimpton at 35s.

The Educational Advisory Board of the British Social Hygiene Council has issued a memorandum entitled "Human Biology and the Crisis in the Public Schools." It is obtainable from the British Social Hygiene Council, Tavistock House South, Tavistock Square, W.C.1.

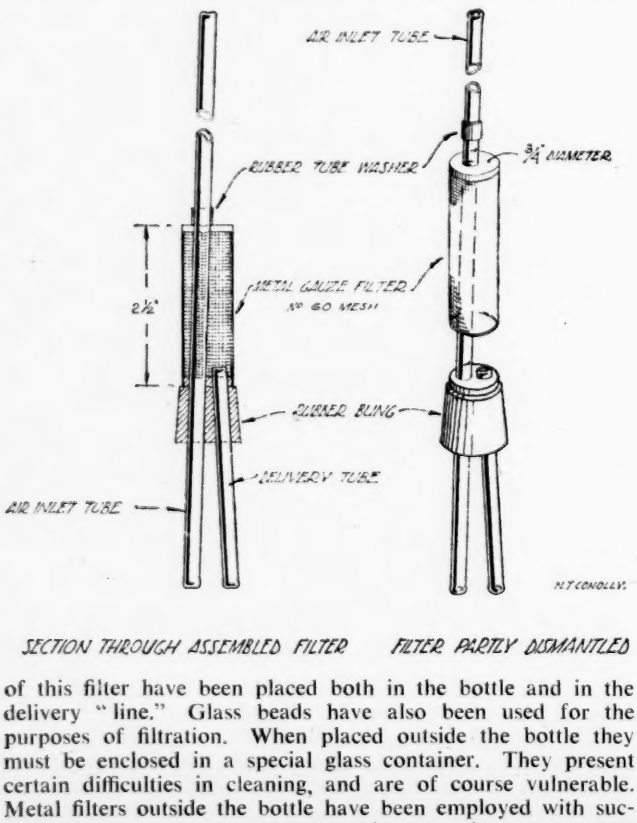
Preparations and Appliances

A SIMPLE FILTER FOR PLASMA OR STORED BLOOD TRANSFUSION

Mr. Thomas C. J. O'CONNELL, M.D., M.Ch., assistant surgeon to St. Vincent's Hospital, Dublin, writes:

Various methods have been used in the filtration of stored blood or plasma before it is delivered into the patient's vein. The presence of fibrin will, under certain circumstances, lead to the formation of "clots," which take the form of either large masses or small flakes distributed throughout the medium. Filters used for the removal of these clots have been classified briefly as those situated (*a*) in the bottle containing the fluid; (*b*) outside the bottle.

The popular "gas mantle" filter has the obvious disadvantage that it must be renewed after each delivery. Types



SECTION THROUGH ASSEMBLED FILTER FILTER PARTLY DISMANTLED

of this filter have been placed both in the bottle and in the delivery "line." Glass beads have also been used for the purposes of filtration. When placed outside the bottle they must be enclosed in a special glass container. They present certain difficulties in cleaning, and are of course vulnerable. Metal filters outside the bottle have been employed with success, but they must be enclosed in glass containers—a method which leads to complexity of design. It is felt that filters situated in the delivery "line" cannot be entirely successful. When fibrin masses are relatively large they may block the outlet from the bottle. Shaking the bottle may dislodge them, but as often as not the entire delivery set must be removed and cleaned.

A filter placed within the receptacle itself would solve many of these difficulties. It is important, however, that such a filter should form part of the "giving set," be easily removed for cleaning, and be relatively cheap. It should, of course, stand up to all sterilizing processes, but should not corrode.

A filter on these lines has been devised by me. It is designed for use with the M.R.C. bottles which are to a great extent employed in blood or plasma storage. In principle, however, it may be used with any form of delivery set. It consists of a cylindrical metal filter, loosely fitted to the rubber bung and retained in place by the air-inlet tube, on which a small piece of rubber tubing is placed. It offers a large filtration surface, is easily removed and cleaned, and is relatively cheap and sturdy. The filter is made from copper gauze of size 60 mesh. This metal was found to be quite satisfactory, but stainless steel is preferable. The exigencies of war, however, prevent its use.

The diagrams illustrate the dimensions and fitting of the filter, which is supplied by Fannin and Co., Grafton Street, Dublin.

PERCALCIN

"Percalcin" (Evans Sons Lescher and Webb, Ltd.) is a solution of calcium in combination with mixed acids derived from glucose. The solution contains the equivalent of 1 gramme of calcium hydroxide in 25 c.cm. This is two and a half times as strong a calcium concentration as that contained in 10% calcium gluconate. Non-irritant solutions of calcium of this type suitable for intravenous or intramuscular administration are finding an increasing number of therapeutic uses. They are known to be of value in such conditions as tetany and urticaria. The vendors have prepared a pamphlet on the subject in which they suggest the use of percalcin in a wide variety of diseases.

IMMUNIZATION AGAINST ENTERIC FEVER AND TETANUS

We have received from Messrs. Burroughs Wellcome and Co. samples of two new products for active immunization against enteric fever. "T.P.3" is the designation given to a vaccine of the ordinary type containing 1,000 million *Bact. typhosum* and 750 million each of *Bact. paratyphosum* A, B, and C in each c.cm. Of the two recommended systems of administration, doses of 0.5 and 1 c.cm. are those adopted in the Army; the extra trouble involved in giving 0.1, 0.5, and 0.75 c.cm. with the same interval of seven to ten days between them is repaid by reactions of reduced severity. This product is available in rubber-capped phials containing 1.5 c.cm. (enough for the immunization of one person) as well as in 25 c.cm. bottles.

"T.A.B.T." is a mixture of T.A.B. vaccine (*Bact. paratyphosum* C being omitted from this preparation) and tetanus toxoid, made in two different proportions, each containing 1 c.cm. of tetanus toxoid, while one mixture also includes the bacterial content of 0.5 c.cm. of T.A.B. vaccine, and the second that of 1 c.cm. These mixtures are available either in single doses or in 25 c.cm. bottles. It is recommended that the two doses be given with an interval of not less than one month. The efficiency of immunization with tetanus toxoid is now fully accepted, and combination with T.A.B. vaccine has been found to increase it. The combined product causes no more reaction than the vaccine alone.

COATED AMMONIUM CHLORIDE TABLOIDS

Tabloid ammonium chloride (Burroughs Wellcome and Co.) has a special coating which is unaffected by the acid medium of the stomach but is broken down in the alkaline medium of the small intestine. Ammonium chloride is the most effective drug for reducing the alkaline reserve of the blood and increasing the acidity of the urine. It is a valuable adjuvant for various forms of therapy, such as the mercurial diuretics and many urinary antiseptics. The chief drawbacks to its use are its unpleasant taste and its irritant action on the stomach. The former effect can be avoided by giving sugar-coated tablets, but these do not prevent the latter effect. The specially coated tabloids reduce the local irritant effects to a minimum.

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THE WINTER EPIDEMICS

At the beginning of the past winter the public health authorities, as a consequence of the drastic changes in the social habits of the population following the intensive air raids, had serious forebodings as to the health of the community. It was feared that owing to the herd life lived by those who frequented shelters the incidence of infections might reach alarming proportions. Epidemic diseases, apart from their epidemicity, have a seasonal incidence. Their prevalence increases in the autumn, reaches a maximum in the early spring, and falls to a minimum in the late summer. It is common knowledge that there was no major prevalence of any specific infectious disease during the past winter, but it is of interest to review the general position in some detail. A table showing the incidence of some of the notifiable diseases in England and Wales during the winters of the past five years is included in the Epidemiological Notes for the week.

Anything approaching an exact comparison of influenza mortality with preceding years cannot be made yet, as the death records available relate only to the large towns, and the population of these areas has been seriously disturbed by evacuation, especially in the larger cities. Greater London accounted for two-fifths of the total population of the 126 large towns in peacetime. There were 2,217 deaths registered from influenza in the great towns during the first quarter of 1941. This was less than one-third of the total registered in the corresponding period of 1937 and about one-fifth of that in 1933, years in which influenza was very prevalent. Even if the figures for the large towns in 1941 give a gross understatement of the true position, it is evident, without being able to specify the exact size of the epidemic, that influenza mortality has not differed much from that of peacetime and is certainly below the level of some recent outbreaks. In the past winter the number of cases of pneumonia notified was slightly less than in the preceding winter and decidedly below the average of the triennium before the war. The notifications of enteric fever were greater than in the preceding period, but below the average for the winters of 1936–9. Dysentery also showed an increased incidence; nearly three times more cases were recorded in the past half-year than in the first winter of war, but the total was below the average of the pre-war triennium. Notifications of dysentery during recent months showed that there have been fairly severe localized outbreaks in widely separated areas. The number of notifications of cerebrospinal fever, 6,138, was nine times greater than the average for the immediate pre-war period, and although it was 706 above the number reported in the preceding winter the epidemic was not so severe. The increased incidence was due to the disease remaining at a much higher endemic level after the outbreak in the beginning of 1940 than before it; in the last quarter of 1940 there were 1,806 cases reported, as compared with 339 in the last quarter of 1939. The maximum weekly notifications were 406 in 1941 and 603 in 1940, while for the preceding four years no weekly total exceeded 50.

Of the common infectious diseases of childhood, more cases of both scarlet fever and diphtheria have been reported than in the preceding winter, when the incidence of these diseases was very low. The notifications of scarlet fever were only three-quarters of the average for the three winters immediately preceding the war, while the incidence of diphtheria was 90%. These diseases have not displayed an epidemic peak but rather a fluctuating seasonal rise. With regard to measles and whooping-cough, these diseases were not generally notifiable until November, 1939, so that it would be necessary to use the mortality rates for making a comparison over a series of years, and these are available only for the large towns. For purposes of comparison, the objection raised in the case of influenza to the use of the deaths for these areas would be more serious in the case of diseases of childhood, as the transference of children from large cities to areas with a low density figure was the principal feature of the evacuation scheme. The number of cases of whooping-cough, 44,160, reported in the first quarter of 1941 was six times that in the corresponding period of 1940, and the incidence has shown a distinct rise in the last few weeks. This increase is in agreement with the trend of the mortality curve of peacetime, which displayed a maximum in the beginning of the second quarter. This peak was absent from the 1940 returns. Notifications of measles numbered 204,158 in the first quarter of 1941 and were four times those recorded in the same period of 1940. The recent trend of the measles curve has been of interest, the most striking feature being the failure of the biennial epidemic, expected in 1940, to appear. The obvious explanation—the evacuation of children to country areas—may not be the correct one, because, judging from the mortality, the usual high spring peak was absent in 1939. The trend of the curve of measles mortality was practically horizontal between the thirtieth week of 1938 and the thirtieth week of 1940.

Despite the herding together of large numbers of the population in air-raid shelters the epidemics of the past winter have been, on the whole, below the average. The rather unsatisfactory position of dysentery and the large increase in cerebrospinal fever were not due to conditions arising out of air raids. In the large towns the effects of the new conditions of life upon the incidence of the common nasopharyngeal infections, colds, chills, etc., can only be a matter of conjecture, as no data are available on this point.

ATTACK ON RHEUMATISM

Planning for a better world is popular at the present time, and is one of the most striking signs of the confidence felt by the nation in the ultimate outcome of the war. No dreams of aggrandizement are entertained, but a determination that the world shall be made a better place to live in. While there may be differences of opinion as to how this should be brought about, few will disagree that one of the first steps must be to build on the ruins created by the air raids better houses in better surroundings, and in this and kindred ways to raise the standard of living and lessen the incidence of disease. With this aim in view, although the idea had its birth in pre-war days, Lord Horder, as chairman of the Empire Rheumatism Council, has drawn up a "Plan for National Action"[1] to deal with rheumatic diseases. The various forms of rheumatism present one of the most important unsolved medical problems in the community. The economic damage resulting from them is estimated to exceed £25,000,000 a year in England and Wales, while the toll of pain and disablement is enormous. The American Committee for the Control of Rheumatism in its *Primer on Rheumatism* (1934) stated: "Chronic arthritis is generally recognized in all European and North American countries as the most important problem that chronic disease presents. . . . A careful house-to-house survey in the State of Massachusetts has shown that there are more cases of chronic rheumatism to-day than of heart disease, tuberculosis, and cancer combined."

Some education authorities, notably the London County Council, have done important work and achieved striking results in dealing with rheumatism in children. The School Rheumatism Supervisory Scheme of the L.C.C. is probably the best of such existing organizations. But the figures already quoted refer to chronic rheumatism in adults. Little has been done to provide systematic treatment and, what is of equal importance, to instruct adults in the best preventive measures to take against rheumatic disease. The nature of specific infection in acute rheumatism has yet to be demonstrated, though important work is being carried out by one of the Research Fellows of the Empire Rheumatism Council and by other investigators. While there is much evidence that bacterial infection is important in rheumatoid arthritis, it is certain that there are other aetiological factors of equal or perhaps greater significance. Such factors are briefly discussed in the booklet describing Lord Horder's plan: heredity, occupation, diet, climate, housing conditions, and psychical influences are all of importance, and nerve strain must not be overlooked. It is to be seen whether the dietetic restrictions imposed by the war will in the long run be harmful or beneficial; but it is more than likely that as a result of war conditions rheumatism will be more prevalent, not only among troops exposed to the conditions of active service, but also among civilians as a result of shelter life, ruined homes, strenuous work in munition factories, warden duty, fire watching, and so on. In any case, a preventive campaign must stress the part which these various factors may play in aggravating the disease.

Lord Horder touches on these preventive measures, but his main purpose is curative: "to note the existing facilities for treatment and to suggest how they can be extended." The principal methods at present in vogue are critically considered, and it is concluded that some are likely to be used only in a small percentage of cases and that a national plan of treatment would at first provide only for those methods which are likely to be of service in the majority of cases. The principle suggested is the concentration, at a few appropriate centres, of specialist knowledge and equipment, with subsidiary centres grouped around them but situated in populous places. The specialized rheumatism treatment centres would use as a nucleus existing institutions such as the spa hospitals, the Red Cross and other clinics, and such general hospitals as have established special rheumatism departments. The function of these specialized centres would be to provide postgraduate training and to carry out research in its widest sense. They would have beds for the treatment of serious cases referred from the subsidiary centres, whose duty would be to provide material for clinical research and teaching. Although not specified in the "Plan," it would be an advantage to provide instruction for fifth-year students, because those who go into general practice will find rheumatic diseases responsible for a large proportion of their daily work.

The local treatment centres would work on the lines of an out-patient department. Equipment for the most useful forms of physical treatment would be required on an adequate scale. A staff of trained masseurs and of special service workers would also be needed. Their task would be to see that simple home treatment was properly carried out and to remedy so far as possible faulty conditions of living. The directors of the local centres would devote their whole time to the work and should have been specially trained for it. It would fall to their lot to determine how far the subjective symptoms not infrequently put forward by the "work-shy" were justified. The scheme should so far as possible allow the general practitioner to make use of the facilities available at the centre. Under present conditions physical measures, which are generally admitted to be of the first importance in the treatment of rheumatism, are available for very few. For juvenile rheumatism the existing machinery for maternity and child welfare could be readily expanded to include the resources of the special centres and to make these available for those who cannot be treated and supervised at home. But for rheumatism in the adult new machinery and equipment would in most places have to be established.

Already child welfare and ante-natal clinics, and in many districts the out-patient departments of the large general hospitals, have encroached on private practice, and it is clear that Lord Horder's scheme would, unless very carefully organized, make still another inroad. As already suggested, however, it should not be impossible to devise a scheme which would enable the patient's home doctor to participate in the treatment of his patients. He would in this way gain knowledge of the greatest value to him in his daily work. The "Plan" deserves careful study by all concerned.

[1] *Rheumatism: A Plan for National Action*, by Lord Horder. H. K. Lewis and Co., Ltd. (2s.)

METHODS OF AIR DISINFECTION

It will not have escaped the notice of any assiduous reader that since the war began strenuous attempts have been made by several groups of workers to perfect a method for disinfecting closed atmospheres chemically. Had any such method been in general use in air-raid shelters and elsewhere during the past winter, the incautious observer might have been tempted to attribute to it the low incidence of cerebrospinal fever, influenza, and pneumonia under conditions which were expected to produce severe epidemics. This is not to imply that the disinfection of air may not be a valuable safeguard when air-borne epidemics have in fact begun, and in the breathing space which summer conditions should afford it will be well to take stock of progress in this matter. It is perhaps not generally understood that no fewer than five distinct methods of disinfecting air have been proposed. Ultraviolet light so applied as to be efficient requires an installation of prohibitive cost for large-scale use, and as it is almost without effect on bacteria in dust particles filtration is also necessary. Smokes are advocated by C. C. Twort and A. H. Baker,[1] who arrived at their present conclusions by way of experiments to determine whether tobacco smoke would interfere with the action of disinfectants suspended in the air; this it did, and the smoke itself had no disinfecting action, in spite of popular belief to the contrary, but smoke from smouldering cardboard or incense was unexpectedly found to be highly bactericidal. They dryly remark that "the practice of burning incense during religious ceremonial has a rational basis," as if the priests of some three thousand years ago who introduced this practice were directed by the same instinct in matters of hygiene as seems to have inspired many injunctions in Leviticus and Deuteronomy. The three methods which on present evidence appear to have a more serious claim to attention all consist in projecting a spray of disinfectant solution in the form of fine droplets; the differences between them lie not so much in the nature of the solution used as in the behaviour of the droplets so formed. According to A. H. Dodd,[2] who does not specify the material to be used but may be understood to refer to an emulsified disinfectant of coal-tar origin, spraying of a dilute solution should be continued until the evaporation of finer droplets has saturated the atmosphere with water vapour; condensation then takes place on any solid particles containing bacteria, which are carried to the ground, where disinfection is completed in a fluid film also produced by the spraying. This proceeding, assuming that it can be made to act in this way, has the merit of dealing also with floor dust. The "aerosol" theory, on the other hand, postulates contact between minute droplets of disinfectant solution and bacteria or infected solid particles; this takes place in suspension in the air, and to achieve it the qualities demanded of the disinfectant droplet are small size and persistence; the latter quality has been attained by the use of glycerin or other non-evaporating solvents. It seems clear from the work of C. C. Twort and his colleagues[3] and C. H. Andrewes and others[4] that certain phenolic disinfectants used in this way are highly efficient; the best according to Andrewes is a solution of hexyl-resorcinol in propylene glycol, but these two substances are not at present available in adequate amounts for large-scale use. He accordingly recommends the use of a sodium hypochlorite solution, which is readily manufactured in unlimited quantities, is efficient, harmless, and almost odourless, and is itself a deodorant. This is the method which has been consistently advocated by A. T. Masterman,[5] who has now published a spirited rejoinder to the paper of A. H. Baker, S. R. Finn, and C. C. Twort,[6] in which they cast doubts on the efficiency and practicability of aerial disinfection by means of hypochlorite solutions. Their mistakes, according to Masterman, include not only technical imperfections such as the employment of inefficient atomizers, but the assumption that the "aerosol" theory is applicable to this method. He describes observations which show that minute droplets of a hypochlorite solution evaporate with extreme rapidity, and the product, owing to interaction with atmospheric carbon dioxide, is hypochlorous acid gas. This, then, is a third and totally distinct effect of spraying—the formation of a bactericidal gas. The advocates of these different methods stand at the three points of a controversial triangle of no small interest, and it would be premature to pass judgment on the differences between them. It may confidently be said, however, that the hypochlorite method has more experimental work behind it than any other; phenolic disinfectants acting as aerosols are efficient but expensive or in short supply, while the idea of washing bacteria out of the air and killing them on the ground at present lacks the support of adequate experimental data.

[1] *Lancet*, 1940, **2**, 587.
[2] *Med. Officer*, 1940, **64**, 149.
[3] *J. Hyg.*, Camb., 1940, **40**, 253.
[4] *Lancet*, 1940, **2**, 770.
[5] *J. Hyg.*, Camb., 1941, **41**, 44.
[6] Ibid., 1940, **40**, 560.

DANGERS OF POSTERIOR PITUITARY EXTRACT IN LABOUR

A drug whose power was not fully appreciated became available when the action of extracts of the posterior lobe of the pituitary on uterine muscle was discovered. There were many who heralded the discovery as marking a new era in obstetrics, and in some clinics the available preparations were spoken of as being "physiological forceps." The physiologist has shown that the uterine response to pituitary stimulation is not so simple as was at first thought, and over twenty-five years of clinical experience have revealed dangers which were unsuspected. The use of pituitary extracts in labour was reviewed recently at the ninety-first Annual Session of the American Medical Association in New York, when papers were read before the Section of Obstetrics and Gynaecology by Drs. Sharkey, Pendleton, and DeLee.[7] In spite of the wide use of the hormone during the first and second stages of labour—a practice which was deplored by all three speakers—it is to be noted that in the discussion following the papers no speaker rose to defend this. DeLee referred to the increasing demand among American women for "streamlined labour," and stated characteristically that such a labour could be as safe as a streamlined parachute. Reynolds has shown that posterior pituitary preparations produce tetanic contractions of the uterus, and stress was laid on the dangers to the mother and the foetus when this happens during labour. Cerebral damage with stillbirth and neonatal death, maternal lacerations, uterine rupture, and damage to the pelvic floor with resultant prolapse are the most common complications. DeLee stated that the number of cases of uterine rupture due to the administration of pituitary extract would never be known, for either the cases were not reported or the patient was buried and the death recorded as being due to shock, haemorrhage, or embolism. Attention was drawn to the important fact that even doses as small as 3 minims (0.2 c.cm.) can be dangerous to the mother and the child, and it was claimed that there was no evidence to suggest that compound preparations such as thymophysin are any safer than

[7] *J. Amer. med. Ass.*, 1940, **115**, 1315, 1318, 1320.

pituitrin or pitocin. In an analysis of the records of St. Vincent's Hospital, Kansas City, Dr. Pendleton found that when pituitary preparations were given during labour operative intervention was increased and the stillbirth and neonatal death rates were more than doubled. The speakers agreed that the use of pituitary preparations during labour placed a grave responsibility on the obstetrician, a responsibility which he is wise to avoid. While remembering the dangers associated with the abuse of these preparations, it is well to acknowledge the service they can safely render when employed with care. Pituitrin helps the uterus to expel its contents during the process of abortion, and in those cases in which evacuation of the uterus is necessary an initial injection of pituitrin into the cervix reduces haemorrhage to a minimum and greatly lessens the risk of perforation. Pituitrin is also of value in the induction of labour, but should be administered in small doses—for example, 0.25 c.cm.—which may be repeated at half-hourly intervals but must be discontinued if pains begin. It must not be given if a placenta praevia is suspected. During labour the hormone should not be used, and in a prolonged second stage an episiotomy or an instrumental delivery is safer than the "physiological forceps." In post-partum haemorrhage the drug is most valuable but has no advantage over ergometrine, and has the great disadvantage that on rare occasions it gives rise to severe shock.

INDIAN HEMP

The hemp drugs are derived from the resinous extract of the female flowers of the hemp plant, *Cannabis sativa*. Cannabis has for long been one of the paradoxes of pharmacology. Under a host of names, such as charas, hashish, bhang, ganja, marihuana, and Mary Jane, it is widely used as a drug of addiction, and there are many vivid descriptions of its action. Nevertheless, except for its use as a colouring agent in corn paints, it has never firmly established itself in human therapeutics; it has been removed from the *British Pharmacopoeia*, though it is still widely used in veterinary medicine. The reason for this lies in the inconstancy and frequent inactivity of the drug. Two recent reviews of the chemistry and the pharmacology of the hemp drugs by Todd[1] and Macdonald[2] give good cause for believing that these defects will soon be remedied. The Egyptian, Indian, and American hemp plants differ slightly from one another. Within each species there is a great variation in the content of active material. The active constituent is contained in the high-boiling portion of the resin, is nitrogen-free, and can be distilled in a high vacuum without decomposition. The earlier investigators made the mistake of believing that this portion was homogeneous, which is far from being the case. Moreover, they were handicapped by unsatisfactory methods of assay. It is now known that the reaction (called the Beam test) in which a red-violet colour appears with alcoholic potassium hydroxide is not given by the active constituents of the drug. Biological tests are therefore used: *Cannabis indica* produces in dogs a characteristic ataxia, and in cats there is also abolition of the corneal reflex. A number of chemical principles have been isolated from the resin. Cannin, the most recently discovered, shows the typical action of the drug in dogs. Cannabinol, cannabidiol, and its isomer cannabol are practically inert. These substances are cryptophenols, apparently derived from the condensation of a terpene and a resorcinol derivative. Synthetic tetrahydro cannabinols, of which a variety has now been produced, show hashish activity; it is more than likely that one of these will replace the crude drug in future therapeutics. The most important applications will probably lie in the field of mental illness. Macdonald describes *Cannabis indica* as the best drug for depressive mental conditions. Not even opium gives the same feeling of well-being, both physical and psychical, and opium is also inferior to hemp because of its tendency to addiction, its depressant action on respiration, its tendency to constipate, and the frequency of "hang-over" next day. Moreover, the power of hemp to revive old memories and recall in detail things long forgotten may be a powerful aid to psychotherapy. Difficulties may arise from the facts that there is great individual variation in susceptibility and that the response in the same individual may vary greatly at different times. Nevertheless we shall look forward with interest to the application in man of these important advances in the chemistry and pharmacology of *Cannabis indica*.

[1] *Nature*, 1940, **143**, 829.
[2] Ibid., 1941, **147**, 167.

FITNESS OF AIR PILOTS

It has long been recognized that only a small percentage, probably not more than 5, of air crashes are due to mechanical failure. It is not the aeroplane but its operation which is chiefly at fault. Ferree and Rand,[1] in a survey of the problem, stress the incongruity of maintaining an aeroplane in perfect condition and giving relatively little attention to the pilot. The fitness of the pilot is, of course, not a mechanical problem. There is, therefore, all the more reason for their recommendation that pilots should be frequently re-examined. The complexity of the problem makes it necessary to have tests of a number of different functions. The authors describe an instrument which should facilitate such tests. It should be possible with this instrument to gauge dynamic speed, capacity for night flying, reaction to changes in altitude, and susceptibility to ocular fatigue. The instrument is electrically operated, and it should be possible to carry out the examination in ten minutes. The problem is of importance; but Ferree and Rand appear to be speaking more of indifference to these questions in the United States than in this country, where the Medical Department of the Air Ministry has paid great attention to them from the time of its establishment. There is no reason to assume that the authorities here have either ignored or overlooked the fundamental difficulties stressed by the writers of this paper.

RHEUMATIC CEREBRAL DISEASE IN SCHIZOPHRENIA

There is something of the attitude of the defeatist in the willingness of many psychiatrists to accept the position that structural changes in the brains of schizophrenics cannot and never will be demonstrated. A paper describing a serious attempt to discover a structural basis for dementia praecox[2] therefore makes stimulating reading. Bruetsch found the post-mortem incidence of chronic rheumatic endocarditis in a series of cases of dementia praecox to be 9%. This is a high figure for a mental hospital population, as it does not include cases of acute rheumatism. The average incidence in general hospital populations, including acute cases, is considered to be well under 4%; and the incidence in a large American mental hospital (Indianapolis), including a high proportion of necropsies on cases of dementia praecox, was 5%. The basic fact, however, in Bruetsch's paper is not the apparent high incidence of chronic rheumatic endocard-

[1] *Brit. J. Ophthal.*, 1940, **24**, 581.
[2] *Amer. J. Psychiat.*, 1940, **97**, 276.

itis in schizophrenics, but the discovery that in all such cases there was diffuse rheumatic vascular disease of the small cerebral arteries. The histological evidence suggested that the infection was active and recurrent, and associated with the arterial lesions were areas of infarction and foci of neurogliosis. In all cases other possible factors such as cerebral arteriosclerosis and syphilis were absent. Bruetsch considers that the vascular and parenchymatous changes which he describes were as extensive as the cerebral damage seen in meningo-vascular syphilis and in cerebral arteriosclerosis accompanied by mental disease. He makes the claim that rheumatic cerebral vascular disease should be given a place in the aetiology of dementia praecox. This claim must be regarded seriously if it is accepted that dementia praecox, whilst being a clinical syndrome, is not an aetiological entity. Bruetsch discusses the relation of the cases to chorea. He notes that a history of chorea is always regarded on the basis of clinical experience as more than an incidental factor in the development of a psychosis, and suggests that if a rheumatic recrudescence involving the brain occurs in later years it may be that not chorea but mental symptoms will result. The paper records the results of a painstaking research and is well illustrated. The histological diagnostic criteria are based on the work of von Glahn and Pappenheimer,[3] Karsner and Bayless,[4] and Gross *et al.*[5] It is pointed out in conformity with the modern conception that rheumatic vascular disease may be widespread throughout the tissues, that lesions in the brain were first described by von Sántha in 1932.[6]

PITUITARY AND SENSITIVENESS TO INSULIN

For a number of years it has become increasingly clear that, although the majority of diabetics can be restored to a state approaching normal by appropriate diet and by injections of insulin, in a number of these the essential disorder is certainly not merely an inadequate production of their own insulin. Diabetics may be divided broadly into two groups according to their reactions to insulin. The first group—typically young diabetics prone to develop ketosis—is characterized by a response to insulin with a fall in blood sugar essentially similar to that of a normal person. It is possible that in this group failure of adequate secretion of insulin is the fundamental cause of their diabetes. In the second group a relative insensitivity to insulin is found, a dose of insulin causing little or no fall in blood sugar. To this group commonly belong the elderly diabetics in whom the disease runs a mild course with little tendency to ketosis. In members of this group insulin has not its normal power to facilitate the passage of sugar from the blood stream to the peripheral tissues. Some abnormality is apparently present which interferes with the action of insulin, and evidence gradually accumulates that this abnormality is in some way connected with the pituitary gland.

In many experimental animals a great increase in sensitivity to insulin results from removal of the pituitary gland. From the anterior lobe of the pituitary can be extracted Young's "glycotropic factor," and if this is injected into the hypophysectomized animals their sensitivity to insulin is much reduced. It seems, therefore, that in the normal animal the continued production of this factor prevents too great a fall in blood sugar after a dose of insulin. Injection of this glycotropic factor into normal animals leads, in a few hours, to a complete insensitivity to insulin, and yet the factor, when injected by itself, has no appreciable power to raise the blood sugar level. This glycotropic factor thus appears to act as a specific "anti-insulin," and as such is clearly likely to play an important part in the phenomena of diabetes, especially in that type which is relatively insensitive to insulin. Support for such a view was provided by de Wesselow and Griffiths,[1] who found that the serum of some diabetics, when injected into rabbits, diminished the animals' sensitivity to insulin in the same manner as does the glycotropic factor. Himsworth and Kerr[2] have recently been investigating the point. Having acquired experience in the detecting of glycotropic activity they applied this to a search for its presence in diabetic blood serum. Twenty-seven patients were examined, of whom twenty-two were of the insulin-insensitive type. In no case was any glycotropic activity found. They were, however, equally unable to demonstrate glycotropic activity in the serum of rabbits previously made insulin-insensitive by injection of the factor in large amounts. Their failure in the human subjects is therefore no proof that the glycotropic factor is not involved in this insulin-insensitivity. But the injected rabbits were found to excrete the glycotropic factor in their urine, and from this it could be concentrated by adsorption on benzoic acid. The urine of the human diabetics was then examined in the same manner, but this yielded no evidence of excretion of the glycotropic factor. The significance of this negative finding was greatly enhanced by the fact that the positive results were, in contrast, obtained with the urine of three cases of hyperpituitarism —one of acromegaly and two of Cushing's syndrome— which had sugar curves of diabetic type. But though no direct proof of the involvement of the glycotropic factor in insulin-insensitivity has thus been obtained, there nevertheless remains indirect evidence that some such mechanism exists. Himsworth[3] had shown that the sensitivity of a diabetic to insulin can be increased by a high carbohydrate diet or reduced by one low in carbohydrate. The same phenomenon can be observed in rabbits, and Himsworth and Scott[4] have demonstrated that this is dependent on an intact pituitary gland, since hypophysectomized rabbits, unlike normal ones, do not show reduced sensitivity to insulin when kept on a diet low in carbohydrate, whereas they do so if injected with the glycotropic extract of the pituitary. Thus although good evidence has been forthcoming that the pituitary is in some way responsible for some forms at least of insulin-insensitivity, the precise nature of its role still eludes clear demonstration. It is evident, however, that the discovery of insulin, important as it is from both theoretical and therapeutic standpoints, has still not revealed the actual cause of the diabetes it so effectively treats.

We record with pleasure that on April 24 Dr. G. C. Anderson, Secretary of the British Medical Association, and Dr. E. C. Morland, Editor of the *Lancet*, were elected Fellows of the Royal College of Physicians of London under By-law XXXIX (b), which enables the College to honour in this way those, not being Members, who have distinguished themselves in any branch of the science or practice of medicine.

We regret to announce the death of Mr. J. Hogarth Pringle, F.R.C.S., consulting surgeon to the Glasgow Royal Infirmary.

[3] *Amer. J. Path.*, 1926, **2**, 235.
[4] *Amer. Heart J.* 1934, **9**, 557.
[5] *Amer. J. Path.*, 1935, **11**, 253.
[6] *Virchows Arch.*, 1932, **287**, 405.

[1] *Lancet*, 1936, **1**, 991.
[2] *Clin. Sci.*, 1940, **4**, 287.
[3] Ibid., 1935, **2**, 67.
[4] *J. Physiol.*, 1938, **91**, 447.

POST-WAR MEDICAL EDUCATION IN LONDON

WITH SPECIAL REFERENCE TO THE MUNICIPAL HOSPITALS

BY

SOMERVILLE HASTINGS, M.S., F.R.C.S.

The municipal hospitals of London have been so tucked away in back streets and obscure corners that few people realize that they contain in ordinary times thrice as many patients as the voluntary hospitals. It has long been felt that insufficient use has been made of the resources of these hospitals for teaching purposes. Accordingly it may not be without interest to state briefly what teaching has been done in them since the war began, and to make suggestions for their further use after the war. It is perhaps hardly necessary to point out that in anything I have to say I am expressing my own views only and in no way committing the London County Council, which is in control of the municipal hospitals of the County of London.

When I was a student we came in contact with the municipal hospitals in two directions only. On two afternoons a week for about two months we attended at one of the fever hospitals for lectures and demonstrations. We also occasionally visited a mental hospital for similar purposes. Most of us regarded these visits as pleasant interludes, but my chief recollection of them is in wondering what advantage was to be gained by the use of the much-soiled overalls at the fever hospital and how some of the apparently normal individuals at the mental hospital managed to find their way there.

To-day I learn that attendances have still to be made at fever and mental hospitals and that a good many students are no longer doing their midwifery "on the districts" as I did, but in municipal and other hospitals. From the medical point of view this is no doubt all to the good, but the sociological value of a month on "extern" must not be forgotten. In it the student, perhaps for the first time, comes into direct contact with poverty in all its nakedness and ugliness. Last summer before the "blitz" started each of twelve of the municipal hospitals of London was taking two to four medical students at a time from ten of the medical schools for midwifery training. In most cases the students attended the hospital for a fortnight only, but a good many remained three weeks or a month, and there is undoubtedly much to be said for this longer period of stay. With few exceptions the students lived in hospital, the Council making a charge of 30s. a week for board, lodging, and laundry. It is, in my opinion, important that the student should reside in hospital, as otherwise a good deal that is of interest and importance is certain to be missed. Since September last the number of confinements taking place in London has considerably decreased, and it has accordingly been found necessary to restrict the number of students in attendance.

Before the war a certain amount of undergraduate teaching was undertaken in L.C.C. hospitals, for the most part by teachers directly associated with the medical schools. On the declaration of war a large number of students were allocated to various municipal hospitals to act as casualty dressers under the Emergency Medical Scheme, and, although their services were not required to the extent that had been anticipated, many were glad to receive clinical instruction in the wards of these hospitals.

Clinical Teaching

The result of the war, so far as clinical teaching in the hospitals with medical schools is concerned, has been twofold: In the first place, the number of beds occupied by cases suitable for teaching has greatly decreased; secondly, the teaching staff have been dispersed and are in many cases either in the Services or working at hospitals remote from their medical schools. Accordingly a good many of the municipal hospitals of London were requested by those responsible for the medical schools to provide or increase their facilities for clinical teaching. Before the wanton destruction of hospitals began in September last, twenty-three municipal hospitals were receiving students from ten medical schools. In most hospitals medicine and surgery are taught, but where facilities are adequate gynaecology, pathology, and paediatrics are added, and in three anaesthetics and in one venereal diseases. The method of teaching varies. In some hospitals students act as clinical clerks in the wards; in others they attend daily or weekly rounds and demonstrations, or work in the operating theatres or receiving wards. In many instances they spend the morning in hospital and go to the medical schools for lectures or tuition in the afternoon. About half the students live in hospital: there is much to be said for this when accommodation is available, as so many emergencies have to be dealt with in the evening or at night.

The clinical teaching has in the past been undertaken (1) by the teaching staff of the medical school, who visit the Council hospital exclusively for this purpose; (2) by the consulting staff of the municipal hospital, who attend at regular times weekly (the position of these officers is slightly different from that of the consultant staff of a voluntary hospital, as they are not in charge of beds but for the most part act as true consultants: they give advice as to diagnosis or treatment of cases submitted to them, sometimes performing any operation required, sometimes the operation being done by the resident staff); and (3) by the staff of the municipal hospital, who are themselves responsible for the medical care of the cases used for teaching. In some hospitals one only of these three methods of teaching is adopted; in others two; and in three hospitals all methods are in use. Undoubtedly there is something to be said for each. The staff of the medical school should be experienced teachers and should know what their students require. On the other hand they are not in actual charge of the patients, and their position in the hospital is, to say the least, somewhat invidious. I do not think the point of view is often expressed, but I do know that some of the municipal hospital staff, who are themselves well qualified, keen on their work, and good teachers, do feel a little uncomfortable when someone from outside comes to give instruction on cases which they have carefully studied. The position of the consultant staff of the Council hospital is of course different, as they have in most cases seen the patients taught on in consultation with the resident staff, although they cannot be expected to know as much about them as those who see them every day. Other things being equal, therefore, I would suggest that the teaching is best carried out by the regular hospital staff.

And here it may be useful to inquire what is to be gained by the use of municipal hospital beds for teaching purposes. From the students' point of view it will be readily admitted that, since at least 50% of them will probably be entering general practice, an intimate knowledge of the ordinary affections, chronic as well as acute, is most essential. This is the very type of case which has to be admitted to the municipal hospitals, not so much because of medical interest or the need for special treatment, but because the patient cannot be looked after properly at home. Gastrectomies and oesophagectomies have to be undertaken, and the student may be fortunate enough to meet with two or three of each during the rest of his professional life; but it is patients with chronic bronchitis, rheumatism, and heart failure that will occupy most of his time.

Relations with the Student

From the point of view of the municipal hospital I would myself welcome the students whole-heartedly. There is nothing like teaching for consolidating one's knowledge and exposing one's ignorance, especially when the taught are keen critical young people at the zenith of their mental capacity. In my opinion the municipal hospitals have suffered in the past from too much isolation. It is good for all concerned to bring in people from outside, and not least perhaps for the nurses, who are usually glad to meet the students and have been known to

make lasting friendships with them. I have discussed the position of students with many medical superintendents and not a few resident physicians and surgeons, and, without one single exception, they have all told me they were glad to have them in hospital.

The relation between the municipal hospital and the student seems to vary a great deal. In some cases the student appears to drift in, take up residence, and remain for a varying time until he desires a change, without the smallest interest being taken by his medical school. In others the work is systematized. Until the East End hospitals were so much knocked about, seven were (and three still are) used by students of the London Hospital, where the policy of the Medical School is to retain its students during the first clinical year directly under the charge of its own hospital staff, and give them careful and detailed teaching on a relatively small number of selected cases; but during the second year, after instruction in pathology, fevers, mental disease, obstetrics and gynaecology, to send them to municipal hospitals, where the greatest variety of clinical experience can be found. Most of the students, I am informed, live in the hospitals to which they are attached. This is said to be very greatly to their educational advantage, for not only do they see emergency admissions during the night but they come to feel that they are part of the organization of the hospital, and in consequence profit and gain experience. During the last clinical year students are allocated to hospitals near the London Hospital or to the "London" itself. Many are living at the near-by municipal hospitals. Students at these hospitals are sufficiently near the "London" to come up several days a week in the afternoon to attend the systematic teaching intended for senior students which is still provided (and will be provided, I am told, as long as possible) at the London Hospital.

When allocating students to hospitals the Dean of the London Hospital Medical School endeavours to meet students' own wishes so far as possible in relation to the kind of work—i.e., medical or surgical—on which they ought to be engaged. On the other hand, the Medical School thinks it a mistake for any students to stay at one hospital for more than six months at a time. This organization is obviously an involved one, and means much travelling round to see how things are going on and a rather complicated change-over between hospitals at the end of each calendar quarter. It has, however, I am informed, worked satisfactorily and is fluid enough to be adjustable at short notice to meet any new situation which may arise.

Problems of the Future

So much for medical education in London to-day. But is it all that it should be? Is the best possible being done under the changed conditions consequent upon the war? In the London Hospital there were 850 beds available for clinical teaching before the war. In Sectors I and II there are now over 10,000 for acute cases, and the London Hospital Medical School is making good use of these. In some of the sectors there are many fewer beds, but I am not quite sure that all are being used to the fullest advantage for teaching purposes. Moreover, why must a medical school confine its students to the hospitals of its own sector? Surely teaching may be of value though it is not given exclusively by the staff of the particular hospital to which a student is attached.

Further, what will happen after the war? Shall we return to the system by which, with the exception of fevers, mental disease, and in some cases midwifery, the whole of a student's education takes place within the walls of a single hospital? Is there not a good deal to be said for three or six months being spent at a hospital in which ordinary everyday cases of general practice can be better studied? And if this be the case, at what stage should this resident appointment be fitted in? I know there are innumerable problems and difficulties—the already overburdened curriculum, the payment of the teachers, the time taken in teaching in relation to their other duties, etc. But all these are not insoluble, and the efficient training of doctors for the difficult years ahead is more important than them all.

Nova et Vetera

SEVENTY-FIFTH ANNIVERSARY OF THE "INDIAN MEDICAL GAZETTE"

The *Indian Medical Gazette* in its issue for December last published a brief history of the past three-quarters of a century to celebrate its seventy-fifth year of issue, about a quarter of a century less than our own *British Medical Journal*. It begins with a brief account of the advance in medical science made during that time, which includes practically all the modern developments, except vaccination, which was somewhat earlier, and goes on to an account of the growth and development of the *Gazette* itself.

During the past century dozens of medical journals have sprung up in India and had their brief day, usually petering out after a few years and now forgotten. The most successful of these was the *Indian Annals of Medical Science*, which started some ten years before the *Indian Medical Gazette* and lasted for about twenty years. But it was never exactly a newspaper; it was much more like a monthly magazine than a journal. There are a number of medical journals of sorts now running in India, some of which may perhaps last. About 1882 the late C. W. S. Deakin, I.M.S., started at his own cost and responsibility a periodical which began as the *Transactions of the N.W.P. Branch of the British Medical Association* and developed into the *Indian Medical Journal*. It ran for some ten years, but ceased to appear after Deakin's death. Dr. Wallace, a retired member of the Indian Medical Department, started a journal, the *Indian Medical Record*, in 1890, which began as a monthly, after three years became a fortnightly, and in 1899 a weekly journal. It ceased with Wallace's death in 1903, but was more than once revived for a time. In 1884 the Government of India began the publication of *Scientific Memoirs*, which came out at irregular intervals, usually roughly monthly. But this has never been in any sense a medical journal, but an issue of highly technical papers.

At the end of the article comes a list of editors, from 1866 to the present day. To two of these editors, who held office for a long time, the success of the *Indian Medical Gazette* is chiefly due: the late Brigade Surgeon Kenneth McLeod, editor 1871 to 1892, and the late Lieut.-Colonel Sir Walter Buchanan, editor 1899 to 1918—especially to the latter, who practically remade the *Gazette* and greatly increased its circulation.

THE HEFFERNANS

Major Patrick Heffernan has put his leisure to good purpose after his retirement from the Indian Medical Service. He has published a concise and well-written history of the Heffernan family.[1] It will be read with interest by many different classes of readers. The Heffernans occupied from time immemorial the tract of country lying between Tipperary and Limerick. They appear in history as large farmers, often above the average in culture, and filling many positions at home and abroad, beginning from very early times. Major Heffernan carries the story down to the present day. The most interesting chapter perhaps is that dealing with the clan system. He suggests that the derelict conditions so common in the south of Ireland are due less to the famine years in the middle of the last century than to the absence of the custom of primogeniture. A father could and did leave his possessions to any of his children; it might thus happen that no one had more than a life interest in the lands and houses, which were thus allowed to fall into disrepair. The theory is plausible and requires more thorough examination. Major Heffernan's book should appeal to medical men because so many of his family have been doctors, especially in the Indian and Army Medical Services.

[1] *The Heffernans and Their Times. A Study in Irish History.* By Patrick Heffernan, M.D., Major, I.M.S. (ret.). (Pp. 200. 10s. 6d.) London: James Clarke and Co., Ltd. 1941.

Reports of Societies

THE EFFORT SYNDROME: ITS NATURE AND TREATMENT

At a meeting of the Section of Medicine of the Royal Society of Medicine on April 22, Sir MAURICE CASSIDY presiding, the subject of discussion was "The Effort Syndrome."

Dr. H. J. STARLING gave a historical review of the subject since 1864, at which time a committee considered it. It was then defined as "an extreme sensibility of the heart, with some but not great enlargement, and on the least exertion the action becomes irregular and the man becomes breathless." In spite of various publications on the "soldier's heart," few realized what it was and how to deal with it until the war of 1914–18. It was Sir Thomas Lewis who first described the condition as "effort syndrome" and instituted the only way by which it could be alleviated or cured.

With few, if any, exceptions, effort syndrome was primarily a civilian complaint. At least 50%—perhaps 70%—of the civilian population, when taken from their peaceful routine of life, were liable to this disorder, though they managed to do their daily work in their particular niche. At Colchester (1917–19) there were, however, a few outstanding men who at first glance looked different from the majority, and as though they ought not to be there at all. They had no tremor, but simply dyspnoea and tachycardia on effort. Almost invariably these were found to have some organic heart lesion, yet they had not been subjected to more strain in the Army than in civil life. In these cases it was not the physical but the psychical distress which produced the effort syndrome, and in most cases with the return to civil life it disappeared.

Since June, 1939, he had been engaged on this problem at the other end—namely, as chairman of the medical boards in a provincial city, where about 300 men per week were passed in various grades into the Service. He had been struck by the immense physical improvement of the men of 18 to 26, and their keenness on enlistment, whether as volunteers or under the Act, and it would be interesting to know whether this type afterwards yielded any considerable proportion of effort syndrome cases. The real national problem was not so much the cure or alleviation of the cases which arose as a result of the war, but the means whereby they might be prevented before war began. Convinced as he was that the disabilities were inherent in the civil population, he felt that the population must be trained in times of peace. The worst type of effort syndrome was found in the lad who was diffident and solitary, often spoiled by an indulgent mother, and much subject to minor infections.

The Emotional Factor

Dr. PAUL WOOD said that a review of English and American literature for the past eighty years, actual contact with some 300 patients, and certain researches had led him to some conclusions about this subject which would be published elsewhere. Here he would only indicate the general line of the argument. The incidence of symptoms in effort syndrome was, first, breathlessness in 93% of cases, palpitations in 89, fatigue or weakness in 88, sweating in 80, nervousness in 79, dizziness in 78, pain in 78, and other symptoms in lower percentages.

The symptoms and signs more closely resembled those of emotion, especially fear, in the normal person, than those of effort or heart disease. Researches into the behaviour of the pulse rate, sweating, breathlessness, and fatigue led to the conclusion that somatic manifestations were due to central stimulation, not to hypersensitivity of the peripheral mechanism. Direct evidence that this central stimulation was emotional was available. He drew special attention to the distribution of sweat in what he preferred to call Da Costa's syndrome. The palms of the hands, the axilla, and to some extent the brow were the usual sites. Such a distribution necessitated an emotional stimulus. On the other hand, if a cholagogic drug were administered, such as acetyl-beta-methylcholine, the distribution of the sweat followed the parasympathetic flush area, and left the extremities more or less free. When an experiment was carried out with this drug the controls sweated more than the patients. How these emotional reactions became linked up to effort was perhaps the crux of the situation. He urged that the diagnosis "effort syndrome" be dropped. A proper psychiatric diagnosis was nearly always available; if attention must be called to the presence of effort intolerance, let "effort intolerance" be added, preferably in brackets. If it was convenient at times to speak of all these cases under a group heading, why not "Da Costa's syndrome"?

Finally, he mentioned researches into left inframammary pain. This pain was not imaginary. No imaginary pain could be so consistent in its characteristics. It seemed to be muscular or ligamentous and related to respiration and to the fact that the heart was beating hard in its irritable fashion against the chest wall. In 25% of the cases the pain was bilateral, but the patients took no notice of the pain in the right mammary region, concentrating on the pain in the left and imagining it referable to the heart.

A Heterogeneous Condition

Dr. AUBREY LEWIS said that "effort syndrome" was a heterogeneous, not a unitary, condition, and therefore it did not deserve a unitary name. A uniform plan of treatment for all cases of effort syndrome would be neither ideal nor efficacious. Probably no one would argue that physical training and graduated exercises were the whole of treatment and not a part, but the emphasis given to them was exaggerated. Perhaps they were more useful diagnostically and prognostically than therapeutically. Sir Thomas Lewis and others had drawn special attention to the large proportion of these patients seen in the last war who had previously followed a sedentary occupation. The more carefully the symptoms were studied the more evident it became that this was not a local disability but a general disorder, influenced by local factors. Both physical and psychological disturbances were at work. Some of the patients were highly suggestible. Any subjective symptoms such as pain, discomfort, weakness, or fatigue would be influenced by the attitude adopted by those who inquired about the symptoms. The symptoms might be intensified or disposed of by the doctor, sometimes without his awareness of the influence he was having on the patient. There were almost always in the man's past both physical and psychological influences strongly represented in his constitution, which had so conditioned him that in the face of the rigors of war he developed symptoms of effort syndrome and tended to utilize them to escape from an environment which did not suit him.

There were only two things the doctor could do: he could either alter the man fairly radically or alter the conditions under which he served, and both these were difficult. To alter a man physically and psychologically so that he would put up with what he could not stand before was only occasionally possible, and alteration of environment was hampered by the necessary rigidity of military arrangements. The returns for a number of men whose history was inquired into six months or more after discharge from hospital to military duty showed that 30% were doing full duty efficiently and willingly, 36% had been discharged from the Army, and the remainder were doing light duty or were doing full duty not quite satisfactorily or had fallen ill again. The conditions to which the men returned would often decide whether they succeeded as soldiers or not, and some commanding officers were more adept than others in fitting these men in. Between one-half and three-fourths of the patients could have been got back to military duty of a type for which they were fitted, but this would have required a sorting of the men and an amount of military administrative procedure which were perhaps hardly practicable. There was very little evidence that these men as a group were physically inferior, and often it was found that in civilian life they had been doing work as heavy as or heavier than they were called upon to do in the Army. A relatively small physical disability was seized upon for emotional purposes and magnified. He added that the problem of effort syndrome bore the hallmark of a psychiatric problem—that is to say, it was an individual and at the same time a social problem, and must be dealt with on both individual and social lines.

Dr. MAXWELL JONES said that breathlessness was one of the main complaints in effort syndrome. It might come on at rest or on excitement, but according to the patients' statements it was more usually related to physical effort. The first point to inquire into was whether hyperpnoea in excess of normal was present after effort, and, if so, whether it could be estimated. He described a respiratory exercise tolerance test which he and his colleagues had devised to show any deviation from normal respiration. It was tried out with 32 patients and an equal number of controls, and the results showed that in fairly severe cases of effort syndrome there was a delay in the return of the volume to the resting level as compared with a group of normal subjects. There were also characteristic differences in respiratory style, vital capacity, and breath-holding in the cases of effort syndrome.

General Discussion

Colonel H. L. TIDY said that in the last war this condition, then known as "D.A.H.," became an extremely important matter; the element of fear was largely regarded as the causative factor. At present effort syndrome in this war was a relatively trivial concern. He believed that in this country only 200 beds were allotted to cases of effort syndrome, these relating to all the Services, and the beds were not all occupied. He thought that Army medical officers should not be encouraged to send cases of effort syndrome to specialists. Many officers had succeeded in getting the men through without sending them either for examination by a specialist or into hospital, and there was no doubt that a number of men were able to be acclimatized and to become useful soldiers, whereas if sent to hospital they would drift into the class of effort syndrome cases. In Sir Thomas Lewis's cases 50% were sent back to the front line, but it was not known what happened to them subsequently; no doubt some went again into hospital. It was an undoubted fact that a large number of these men were below the physical average, and their condition was not improved to any great extent in hospital.

Sir MAURICE CASSIDY said that he did not suppose many of those present ever saw these so-called "effort syndrome" cases in the last war before they went to Colchester. In 1915 and 1916 large numbers of men were to be seen who had been kept in bed for months with a persistent tachycardia—rates of 120 or even more. They reminded him of a second-hand car which he bought at that time. On asking his chauffeur what he thought of the brakes, he replied, "Well, sir, with this kind of brakes, the harder you press them the faster she goes!"

Sir ADOLPHE ABRAHAMS said that he, too, deprecated the term "effort syndrome," but he could not substitute anything more satisfactory, and its predecessors "D.A.H." and "soldier's heart" were very much worse because they concentrated attention on the heart, and the second of them suggested an occupational disorder. The term "effort syndrome" would be more acceptable if it were quantitative, as some people had the impression that it was—in other words, that a minimal effort in these subjects produced the same train of symptoms as were produced in anyone if the exercise was sufficiently severe. But the symptoms which occurred in these people had nothing to do with effort, and the large majority of them could never be produced by effort, however severe, in a normal subject. Even breathlessness in a physiological sense was a different phenomenon from what was seen in these cases. On occasion one might see a great athlete tremulous, sweating, shivering, and completely incapable of any physical effort; but that had nothing to do with effort, it was simply the prospect of an ordeal, and the same train of symptoms might be produced in a person who was about to make a speech or enter for an examination. A number of different things had all been lumped together because they had the same symptomatology and to a certain extent the same physical signs. But gradually order was coming out of this chaos. The workers were isolating certain groups which could be explained. It was true that there was a baffling residue, whose incapacity for exertion, symptomatology, and physical signs were not explicable. He always had the hope that if they were explicable a great deal of normal physiology would be learned from them

Major GERALD SLOT said that cases he had seen were not always in the new recruits; they were often men who had been in the Army since the beginning of the war, and a good many of them seemed to date their trouble from Dunkirk. On going back a little into their history it was sometimes found that they were temperamental, emotional, and unlikely to stand up to stress and strain. It was idle to send these people back to their units; they would only be sent somewhere else within a short time. Hospital treatment did not seem to be successful. They got better in hospital, but the condition recurred after discharge. It was well to be on the look-out for thyrotoxicosis in cases bearing this label, and also to be aware of the possibility of early tuberculosis. As for left inframammary pain, he had been able in many such cases to elicit a history of fibrositis.

Major C. HEWITT ATKINSON said that he did not think it was sufficiently explained to these patients that anyone undergoing mental or emotional strain also went through a physical effort. The patient was puzzled by his palpitations, and a proper explanation of the symptoms helped towards reassurance and recovery. "Effort syndrome" was a wide term. He was accustomed to think of these cases in three groups. The first consisted of the true effort syndrome case, in which the patient had been through a severe ordeal and showed signs of cardiac strain. The second consisted of those who came up primarily anxious about their heart (the characteristic individual was the over-strained student). The third class consisted of those in which infection was present.

Major GEOFFREY KONSTAM said that if any progress was to be made certain definite limits must be laid down. He would eliminate cases of pure anxiety neurosis without particular symptoms of effort and also the pure cardiac neurosis. Dr. Paul Wood had exhibited to the meeting a painting of a patient at Mill Hill illustrating what he considered to be the typical constitutional case—the strained features, the slumping posture, the flat chest. In Major Konstam's view the rather placid face in this portrait did not illustrate the condition. In the typical case he had been struck by the corrugations on the forehead, both horizontal and vertical.

Dr. STARLING, in reply, taking up Dr. Paul Wood's suggestion that the term "Da Costa's syndrome" might be used, hoped that no more syndromes or diseases would be described by a person's name.

DEATH AFTER DELIVERY

At a meeting of the Section of Obstetrics of the Royal Academy of Medicine in Ireland on March 14, the chair was taken by the president, Dr. R. M. CORBET, and Dr. J. G. GALLAGHER read a review of some of the causes of maternal death shortly after delivery.

Nearly all his cases came under the heading of "obstetric shock"; they had occurred in the Dublin maternity hospitals during the last five years. Among 52,000 deliveries there had been 248 deaths, 74 being due to haemorrhage and shock. A search for a common factor had shown that 30 deaths had followed manual removal of retained placenta, that ante-partum haemorrhage had been a factor in 25 cases, and that anaemia had been the main factor in 6 deaths and important in 8 others. The remedy for anaemia was more widespread ante-natal care and better all-round nutrition. Many of the patients with ante-partum haemorrhage had been received in a dying condition; both transfusion and section had had a fair trial. Placenta praevia had caused death from bleeding in 8 cases. Twelve patients had died of shock from abruptio placentae, and there had been 5 fatal cases of external accidental bleeding. The mortality of manual removal of the retained placenta was 11 to 15%. Death was apparently due to shock in 25 cases, in 18 of which there had been no post-partum haemorrhage and a normal second stage. Five deaths had been due to sepsis. The real danger of operation was shock. Plasma transfusion might improve the results. Crede expression and intracordal saline had been associated with 2 deaths each. In addition to these three groups there had been post-partum bleeding in 22 of the cases, severe in 6; 7 cases of ruptured uterus, one of acute inversion; 6 of craniotomy, 9 of version, 7 of section operation, and 1 breech

extraction. There had been 19 forceps cases, in 5 of which the forceps had failed to deliver.

Dr. BETHEL SOLOMONS said that with very few exceptions the term "obstetric shock" would not be used to describe the cause of death; it meant that the obstetrician did not know why the patient died. To ascribe death to obstetric shock in cases of ruptured uterus, concealed haemorrhage, and failed forceps would be to prevent research which might lower mortality. Manual removal of the placenta was a disease of the junior obstetrician. A really adherent placenta rarely occurred at the first birth. Conservative measures gave much better results than Caesarean section in concealed accidental haemorrhage. He hoped that the injection of submammary saline was still taught for district work; pituitary shock would not occur if the extract were given after the placenta was delivered.

Dr. T. M. HEALY agreed that obstetric shock was a rare condition; he thought that many of Dr. Gallagher's fatalities were due to traumatic shock. It was exceedingly difficult to know what some of these patients died from; it would be a great comfort to obstetricians to know why, when patients bled into their tissues or into the peritoneal cavity, they got into such an extraordinary state of collapse after such small loss of blood.

Dr. O'DONEL BROWNE felt very strongly that the term should not be abandoned, and stressed the necessity for sharp distinction between it and the collapse or shock of excessive bleeding. He thought that Dr. Gallagher's summary indicated, as significant aetiological factors, ill-health before the confinement, prolonged labour, misapplied obstetric operations and bad obstetrical judgment, exposure to cold, and prolonged anaesthesia, but these factors would not of themselves precipitate the condition without concurrent tissue damage. He thought that pituitary shock was overestimated, and that judicious use of pituitary extract was a great asset in the treatment of shock. He had never known a case of traumatic post-partum haemorrhage where bleeding from a torn cervix demanded suture, and wondered whether the cases treated by cervical suture were not really incomplete uterine ruptures. Dr. A. SPAIN said that the mistake was to use the term "obstetric" in this condition; most of the patients had died from a shock which was in no way different from shock due to other conditions. Shock was a very definite clinical entity. In most cases manual removal of the placenta should be done earlier than it was. Dr. F. W. DOYLE believed that obstetric shock undoubtedly did occur, and described a case. He thought collapse and shock were two different conditions with many features in common. Dr. E. A. KEELAN said there must be a small group in which maternal mortality had its inception in the first stage of labour—for example, primiparae who did not obtain adequate rest, sleep, or food in the first stage, whose improper feeding produced vomiting, often persistent, or who were told to bear down too early. The result was maternal distress and premature termination of the second stage. Dr. D. F. HANLEY noted that all Dr. Gallagher's patients had been wounded in some way. The shock complex seemed to be secondary to some kind of trauma.

The PRESIDENT said that the records of the Coombe Hospital for the last five years suggested that patients who died shortly after delivery could be grouped into three classes: those with organic disease (9 cases), those with grave abnormality of pregnancy (8 cases), and those who had no complications before the onset of labour (1 ruptured uterus, 1 pulmonary embolus, and 4 cases of obstetric shock). He would reserve the term "obstetric shock" for those cases which had an atraumatic delivery without post-partum haemorrhage. He had long disbelieved in its existence, but had been forced to accept it. The consulting obstetrician was called to a patient in a terminal condition which might have resulted from either shock or haemorrhage, and had the grave difficulty of diagnosing between them. Manual removal was not associated with any mortality if undertaken for post-partum haemorrhage due to partial detachment of the placenta. It had a high mortality in patients who had developed shock without any adequate haemorrhage, but he was not satisfied that the mortality would be reduced by leaving the placenta in a patient whose shock was becoming progressively worse.

Dr. GALLAGHER, in reply, said that submammary saline was slow and much more unpleasant for the patient than subcutaneous saline. He thought it would be difficult to find a short term to replace "obstetric shock."

Local News

ENGLAND AND WALES

Healthy London

The health record of London for 1939, the year in which a city devoted to the arts and services of peace switched over to a war footing, was remarkably good. This is the conclusion to be drawn from the very attenuated interim report for that year of the County Medical Officer of Health and School Medical Officer (Dr. W. A. Daley).[1] Infant mortality stood at the lowest figure ever reached—47 per 1,000 live births. Infectious diseases were all at the ebb, except for a trifling increase in the notifications of encephalitis lethargica and a rather considerable increase in the number of deaths from influenza. The number of notifications of diphtheria was down by more than one-half and those of scarlet fever by nearly one-third as compared with the year before. The number of deaths from pulmonary tuberculosis was virtually unaltered, but the primary notifications were lower. On the registers of London boroughs the number of cases of pulmonary tuberculosis stood at 23,000, and those of other forms at 6,700. An immediate effect of the war was a dislocation of the tuberculosis dispensary service and also the discharge of 1,750 patients from residential institutions in order that beds might be reserved for Service or civilian casualties. There was also a decline during this year in both notifications of and deaths from puerperal fever and pyrexia, this in spite of the fact that the number of beds available for maternity patients in London hospitals was materially reduced so that an increased proportion of confinements took place at home, many of them attended by the council's domiciliary midwives, who now number more than 100. Many important schemes of improvement and development in the county hospitals of London had to be abandoned on account of the war. All the patients in the general hospitals for acute cases who were reasonably fit for discharge, 4,000 in number, were sent home; others were transferred to hospitals outside the county boundary; and there remained 4,000 who could not be moved, while 7,600 beds were made available for air-raid casualties. But the expected air raids did not occur, and some acute sick were readmitted. The number of patients urgently requiring treatment who were admitted to the general hospitals during the last three months of 1939 was 29,500, or three-fourths of the number admitted during the corresponding period of 1938. The number of sick admitted to the special hospitals fell from 53,000 to 32,000 for the whole year. This includes the infectious diseases hospitals, where the number fell from 40,000 in 1938 to 21,500 in the following year. The reason for this is, of course, the decline in the child population of London under the Government evacuation scheme, but the low incidence of infectious diseases among the remaining population had something to do with it. The most complete dislocation occurred in the school medical service. With all the schools in London closed, and the school population, normally 435,000, reduced to 180,000, there was at first an entire eclipse of school medical work. But by November many of the school treatment centres were reopened, and by the end of the year nearly one-half the eighty minor ailments centres were functioning. While there was still no regular schooling the school medical service was in active operation. During the first two terms of 1939 over a quarter of a million children were medically inspected, nutrition was pronounced satisfactory in over 93%, and general health was good, showing in nearly every particular a slight improvement over previous findings.

Grants by the Nuffield Provincial Hospitals Trust

The trustees of the Nuffield Provincial Hospitals Trust have made a number of grants for hospital and ancillary medical services. They have authorized a substantial grant to the

[1] London County Council. *Interim Report of County Medical Officer of Health and School Medical Officer for 1939.* Westminster: P. S. King and Son, Ltd. (6d.; post free, 7d.)

Birmingham Accident Hospital as a practical expression of their desire to promote the establishment of efficient fracture services. The grant is made on the condition that the balance of the initial capital expenditure necessary to convert the old Queen's Hospital into the new Accident Treatment Centre is forthcoming from other sources. They are also making a contribution towards the capital cost of an Accident Treatment Centre in Oxford, proposals for which have been approved by the Berks, Bucks, and Oxon Regional Hospitals Council. Proposals have been prepared by the Medical Advisory Council of the Trust for a regional pathological service to provide complete, co-ordinated, and effective laboratory services for both public health and clinical pathology. The trustees have authorized a grant of £1,500 to the Regional Hospitals Council of the Berks, Bucks, and Oxon area towards the capital expenditure of the service. It is considered that valuable experience may be gained from this which will furnish a guide for future action in other regions. Financial provision is also being made by the Trust for a cancer survey to be undertaken in two regions. The trustees consider that the success of the scheme for the regionalization of hospital and medical services depends, to a large extent, upon the active, intelligent, and sustained co-operation of the general practitioner. It has accordingly been decided to adopt a scheme, experimentally in the first instance, in the area of the Oxford and District Joint Hospitals Board, for a medical liaison service. Under this scheme one or more retired medical practitioners will be appointed to act as liaison officers between the joint board and the general practitioners in the division. The cost of the scheme for the ensuing year will be defrayed by the Trust. A grant of £2,000 per annum for three years has been made to the Prince of Wales's Hospital, Plymouth, for allocation through the South-Western Regional Hospitals Council, subject to a satisfactory arrangement being made between the hospital and the Corporation on the co-ordination of hospital services in Plymouth and to an agreement between the Plymouth Corporation and the Devon and Cornwall County Councils as to the payment of contributions to the Prince of Wales's Hospital. A grant of £2,000 has also been made to the Royal Berkshire Hospital for the current year, and a further grant of £1,000 for a second year, subject to certain conditions.

Hospital Regionalization Conference in Liverpool

A conference has lately been held at Liverpool on the invitation of the Vice-Chancellor of the University (Dr. A. D. McNair) to discuss proposals from the Nuffield Provincial Hospitals Trust for a regionalized hospital service in the north-west. It was attended by representatives of the Trust, the Liverpool Hospitals Joint Advisory Committee, and the local authorities and voluntary hospitals of Lancashire and Cheshire, North Wales, and Westmorland and Cumberland. The Vice-Chancellor stated that some months ago the Trust approached the Advisory Committee, which represented both the municipal and the voluntary hospitals of Liverpool, asking whether the necessary steps might not be taken to form a hospital region based on Liverpool and its university medical school. The committee examined the proposals and decided to give effect to the request, with the result that the conference was called, not to accept a cut-and-dried scheme, but to consider the principle of regionalization as applied to the area. Addresses were given by Mr. W. M. Goodenough, chairman of the Trust, Sir Farquhar Buzzard, chairman of its Medical Advisory Committee, and Mr. S. Richardson, chairman of its Provincial Hospitals Regional Committee, and the conference was then thrown open. While the principle of regionalization was generally supported as a means of better co-ordination between voluntary hospitals and local authorities, it was felt that those present had no mandate to vote, and on the motion of Prof. Henry Cohen it was agreed, while expressing the desire of the conference to examine sympathetically the principle of regionalization, to adjourn to a later date so that the representatives of local authorities and voluntary hospitals might consult their constituents and obtain such a mandate. The chairman of the Birkenhead Health Committee, Councillor H. Bullock, said the lack of co-operation hitherto was due largely to the attitude of the voluntary hospitals, and he asked whether those hospitals would still be allowed a preferential position in regard to training, nursing staffs, and patients, and whether redundant hospitals would be scrapped. Sir Farquhar Buzzard replied that such questions could only be decided by the regional councils themselves. There was no desire to aggregate all consultants in one place, but rather to distribute them wherever needed.

SCOTLAND

Glasgow and the E.M.S. Hospitals

At the annual general meeting of Glasgow Royal Infirmary, at which the Lord Provost, Sir Patrick Dollan, presided, Sir William Marshall, referring to recent speeches of the Minister of Labour concerning the man-power of the country, said he could not help thinking of the incapacity through illness which prevented a large section of the people from doing their best in the national effort. It was stated that in this country on any day throughout the year 650,000 of the working population were away from work on account of unfitness. He believed that much of this incapacity need not exist if the medical and surgical services were immediately available for efficient treatment. A great army of workers might be pulling their full weight were it not for the fact that they could not obtain the treatment their medical advisers considered necessary for the restoration of capacity. Some of the emergency hospitals had very few or no patients. If there had only been some loosening of the restrictions regarding empty beds in emergency hospitals a large number of civilian patients would have been made fit for their work to-day. Sir William Marshall welcomed, as did Mr. Charles Glen, chairman of the Glasgow Royal Infirmary, the steps taken by the Department of Health to have waiting patients received in the emergency hospitals.

Bequest to Edinburgh for Medical Research

By a judgment in the First Division of the Court of Session, Edinburgh University becomes entitled to the whole residue of the estate of the late Mr. John Risk, a distiller of Stirling, to be applied for the advancement of medical and surgical research. By his trust disposition Mr. Risk directed that in certain events his trustees should pay one-half of the residue of his estate to the surviving issue, if any, of his daughter, or, in the event of there being no such issue, the whole residue to the Court of the University for this purpose. He also declared that should his daughter repudiate the settlement and claim her legal rights she and her issue should forfeit all rights under the settlement. Miss Risk did in fact claim her legal rights. It was agreed between the parties that the trustees were entitled to divide the estate remaining in their hands into two equal parts and to pay one of such parts to the University, but with regard to the other it was contended on behalf of Miss Risk that the trustees were not entitled to pay it away so long as it remained uncertain whether or not she would be survived by issue. The Division held that the University Court was entitled to payment of this second part of the residue.

Edinburgh Medical Missionary Society

The Edinburgh Medical Missionary Society will celebrate its centenary on St. Andrew's Day this year. Beginning in a small way its work and fame grew, and it has been the means of helping well over 300 medical students to train as doctors for the mission field under different religious denominations. It has also maintained hospitals in Nazareth and Damascus. To commemorate the first hundred years Dr. H. F. Lechere Taylor, a former secretary and superintendent, has written an outline of the history and activities of the society under the title *A Century of Service*. During the earlier years it was known as the "Edinburgh Association for Sending Medical Aid to Foreign Countries"; the present title was adopted in 1843. In 1861 the society took over the Cowgate Dispensary in Edinburgh. Extensions of the premises have included the Livingstone Memorial Medical Missionary Training Institution. It was in 1853 that the society sent its own first medical missionary to India.

Correspondence

"Bureaucratic Surgery"

SIR,—Mr. Norman Lake's letter has anticipated two short papers that I had in preparation—one on the treatment of scalp wounds, the other on the part that neurosurgery is playing in the present war. These might have forestalled some of his criticisms. I doubt whether Mr. Lake really objects to organization, though he clearly resents some of its results.

In brief, the reasons for the segregation of neurosurgical cases were twofold: first, the belief that they would be more competently treated and more fully investigated with regard to their present and possible future pensionable disabilities if they were in the hands of those who spent their lives at the work; second, the furtherance of research.

Once it had been decided to open these Centres the next question was, What types of injury were to go into them? This is, as Mr. Lake admits, a difficult one. Yet it was fundamental and it had to be answered. The only safe way was to ask that all head injuries, both slight and severe, should be sent. And in order to get a cross-section on the casualties notification of head injuries was set up. This was an excellent arrangement, for how otherwise was it to be learned what the incidence of the injuries was, what were their types, how many required operation, what was their mortality?

Experience was showing that even the scalp wounds were not being treated as well as they might have been. The simple scalp wound, about which one can in theory become so irate, is an abstraction. These wounds when inflicted under war conditions have commonly been produced by a force much more severe than those of peacetime, and complications are more common. I drew attention to this fact in a special paper in 1919. In the present war cases came into the Centres with missiles in their brains and with their wounds unexcised and septic. It is no use objecting that these were not scalp wounds; they were taken for such and treated as such in the receiving hospitals until the error was perceived. I have no doubt that Mr. Lake and others of his standing and skill would not, and do not, make these mistakes. But the fact of importance is that some persons do so. How, I ask, would Mr. Lake have solved these difficulties, not in the light of theory but with actual experience before his eyes? I would remind him that his ruling would have to cover not only the London teaching schools, the great schools of the Provinces, but also the large towns, the small towns, the cottage hospitals. No one can pretend that experience and ability are evenly distributed throughout the countryside, yet a ruling has to be made for all. I have always been aware that the order contains in it a germ of the ridiculous, but it was felt that the rule would be applied with common sense, and the trivial bumps and scratches would not be sent in. Mr. Lake can rest assured that this is so. It is clear that many surgeons feel some resentment, even an affront to their reputations, at what they call their "cases being taken from them." This is a sentiment shared alike by the less expert as well as by the good surgeon. How can a clear, workable, but not invidious, ruling be made, how precisely can exemptions be given, and to whom? And what will be the effect of these when it becomes known that So-and-so has been given permission to be the complete individualist and specialist in this or that or even to be a multi-specialist when So-and-so has not? What is more, the dispersal of cases into many hands makes co-ordinated research well-nigh impossible. This brings me to the other reason for the Centres beyond that of pure organization for practical purposes. The only way to further research, for which the present times offer unique and, we trust, non-recurring opportunities—for example, on the effects of the new antiseptics on brain wounds and meningitis as well as on neurological problems generally, such as the cortical electro-potentials after injury—was to collect the cases together. Several of these Centres are doing research of some kind or another with help from the M.R.C., and in order to obtain an unselected material for study both the slight as well as the obviously severe injuries must be gathered together. This was the reason for the setting up of the few peripheral nerve centres of which Mr. Lake also complains. It would have been a disaster if the Ministry had paid no heed to such projects because of the possible future objections of the few. Nor could the Medical Research Council have given its valuable help economically if the work had gone on in a plurality of places.

I believe that some of Mr. Lake's objections might have disappeared, or been less bitterly expressed, had he known what the ideas were behind the shortly worded and, I admit, not very explanatory requests that have doubtless come his way.

The wider issue as to what the future holds in the way of State medicine must be left. But I imagine and hope that the patient will be entirely free in his choice of doctor or surgeon. The war casualty is not in a position to choose; and the surgeon looking after him is, in regard to that patient, without vested interest or possession.

The exigencies of wartime have severely limited opportunities for discussion between ourselves in the ordinary way, hence misunderstandings. But it would be too much to hope that any arrangement could be arrived at, by any means whatever even in peacetime, that would find no critics, no dissenters.—I am, etc.,

Manchester, April 21. GEOFFREY JEFFERSON.

SIR,—In his letter Mr. Norman Lake echoes the sentiments of all his colleagues when he expresses his desire to see the Emergency Medical Service as perfect as possible from the patient's point of view. Yet if we will the end we must be ready to adopt the necessary means, and, as one who is quite as critical of the bureaucrat as Mr. Lake can be, I venture to submit to him that we must judge any therapeutic instruction or recommendation upon its merits, and that we may not dismiss it as a piece of medical bureaucracy simply because we distrust the channel through which it reaches us. Here at least is an opportunity for the use of that sound judgment which Mr. Lake—bolder than I—claims by implication for all senior members of voluntary hospital staffs.

In the particular matter of the instructions upon the treatment of head injuries to which he objects, Mr. Lake may possibly be willing to concede to me, who am neither bureaucrat nor neurosurgeon, a dispassionate point of view and one founded upon some experience. Through the courtesy of a surgical colleague I have had the opportunity in the special "head centre" of an E.M.S. hospital to see a considerable number of recent cases of head injury of all grades of severity. This experience has fully convinced me of both the need and the soundness of the instructions referred to adversely by Mr. Lake, and it has led me to the two following conclusions:

1. That hitherto we have all been very ignorant of the incidence, range, and character of the abnormal neurological signs that may accompany apparently trivial scalp wounds unattended by evidence of cranial injury; and that such signs are to be found in a considerable proportion of such cases by those who, trained to elicit them, make a systematic search for them.

2. That, despite the issue some considerable time ago of recommendations for the initial treatment of head injuries, these recommendations are not being as generally adopted as is desirable, with the result that in a proportion of cases the period of treatment and of disability is unnecessarily lengthened and the final prognosis adversely affected.

Facts substantiating these conclusions are shortly to be published by the surgical colleague to whom I have referred.

If these conclusions are sound, no general surgeon can reasonably resent the inference that the surgeon with special experience in craniocerebral surgery is best placed to detect the signs of damage to the brain in apparently trivial head injuries and to formulate rules for the most effective treatment of the latter. That such rules must of necessity in the present circumstances be issued through a Government Department does not permit us to dismiss them as mere bureaucratic interference with medical judgment. To tilt at specialists is an amusement as easy and as unsatisfying as calling grapes sour, but since the subject is raised it may not be amiss to point out that if there be a man more dangerous than the too exclusive specialist it is he who desires to be thought a specialist in every branch of our art and will learn from no one. A considerable experience as a spectator of craniocerebral surgery and its results has convinced me that the theory and the

practice of this branch of surgery are safest in the hands of the specialist, and the general surgeon need suffer no loss of dignity, no matter what his years, in learning from him what he has to teach.

No one seeing large numbers of cases of head injury resulting from air raids can doubt the seriousness of the problem of examination, assessment, and treatment they provide. We shall do ourselves less than justice if, through a false sense of dignity, we decline to avail ourselves of advice that, through whatever official channel it reaches us, is certainly the fruit of the ripest experience.—I am, etc.,

London, W.1, April 23. F. M. R. WALSHE.

Reception and Treatment of Air-raid Casualties

SIR,—Among recent interesting contributions to the *Journal* on the reception and treatment of air-raid casualties, a subject of considerable moment to all those of us called upon to carry out this duty, Mr. John Robert Lee's description (April 19, p. 584) of his routine stands out by virtue of its restraint and accuracy. The desperate conditions under which he has worked are only too well known to most of us. His classification of casualties is the one which circumstances dictate; his care for the individual patient (so rare in these days of schemes) is obvious; and how true his statement that methods successful in the proper treatment of road, rail, and machinery accidents are equally successful for the even more serious air-raid injury! Sulphanilamide is not an easy substitute for the meticulous excision and suture of wounds, but a means of avoiding infection in those cases where it is impossible to carry out the counsel of perfection.

Three of Mr. Lee's remarks interested me particularly as reflecting my own state of mind. The effort to avoid amputation is always worth while, and, as he states, is nearly always successful. We also have struck the idea of two surgeons operating on one patient with multiple injuries and the results are gratifying, particularly when one of the lesions is abdominal. Mr. Lee likes to keep Group 3 cases under his own care; so do we all, and the moving of a patient bombed and operated on within twenty-four hours horrifies me more each time it recurs. The inevitability of the recurrence is even more horrifying. Surely the powers that be should realize by now that the right place to treat air-raid casualties is somewhere outside the bombed area, not in it.—I am, etc.,

Liverpool, April 21. E. N. WARDLE.

Renal Failure in Air-raid Casualties

SIR,—I have been interested to read reports in your *Journal* of air-raid casualties treated by intravenous injections of fluids in the presence of renal failure. It may not be out of place for me to record my own conclusions concerning the intravenous administration of fluids in relation to renal failure, coming on post-operatively in urinary cases.

Renal failure is sometimes not only made worse but is actually initiated by intravenous fluids administered either too generously or too quickly. Because of these consequences, while the drip is going on a careful check must be kept on the urinary output, and if this is found to be in abeyance it might well be asked, What is becoming of the fluid that is being put into the patient's vein? The strong suspicion that it is collecting in the various organs and tissues of the body should be a sufficient reason for discontinuing the transfusion. My own rule in treating renal failure is not to give more than a total of two pints administered continuously over a period of eight hours, and to abandon this form of treatment entirely if there is no important increase in the volume of urine after the patient has received twenty ounces of fluid continuously administered in the course of four hours (rate of drip, 40 drops per minute). For, in such circumstances, to persist with the transfusion to any considerable extent, in my experience, invariably leads to widespread oedema and death. Post-mortem examination in such a case will show that the kidneys have shared in the general oedema, and thus further interference with function has occurred of organs of which the activity had already been impaired.

Under war conditions the danger of renal oedema occurring in some cases of injury with shock certainly also calls for the most careful control of intravenous administration.—I am, etc.,

London, W.1, April 23. H. P. WINSBURY-WHITE.

Crush Injury and Experimental Uraemia

SIR,—It was with great interest that I noticed reports of a series of cases of renal failure following crush injuries in your issue of March 22. Although this syndrome is new to clinical experience it is already quite well known in the realm of experimental medicine. I feel that it is important that this work should be brought to light at the present moment, as it may prove of use in the treatment of future air-raid casualties.

All who are interested in this condition will be well repaid by consulting an admirable and most comprehensive article on experimental uraemia by E. Andrews, in the *Archives of Internal Medicine*, vol. **40**. He first showed, in experiments carried out on dogs, that the total amount of water it is possible to make an animal excrete by the kidneys by injecting hypertonic saline was proportional to the CO_2-combining power of its blood, and that when a tourniquet which had been tightly applied to the leg was released there was a fall in the CO_2-combining power and urinary output. The mechanism whereby this arrest of urine formation was brought about was considered to be due to the liberation of lactic acid into the circulation from the damaged muscle, in which there seems to be some defect in glucose oxidation with the tourniquet applied. By a combination of these two experimental procedures it was possible to reproduce a practically perfect picture of the "uraemic syndrome." Many of the signs were caused by upset of the mineral salt metabolism and the ensuing altered cellular permeability.

R. N. Bieter, carrying out direct microscopical observations of the living frog's kidney, demonstrated a reduction in the number of glomeruli showing active circulation following the release of a tourniquet. This effect could be prevented by cutting the sympathetic chain (*Amer. J. Physiol.*, **91**). I had myself in 1936 the opportunity of verifying these latter observations, and I also made a few additional ones of my own. I found that in the glomeruli whose activity had been arrested by the release of a tourniquet the capillary loops were distended with red cells, unlike the normal functional intermittency exhibited by the glomeruli of the frog's kidney, in which the capillaries are constricted and contain only a few red cells. If the animal was excreting a dye such as phenol red when the reduction of functioning glomeruli occurred, it was seen to become concentrated in the distal convoluted tubules, appearing as dark red streaks. It was usually impossible to attach a tubule to any particular glomerulus, but with the return of the circulation the dye was seen to be washed out. The concentration was very high in the distal tubules during the period of stasis, due to both the absorption of water and the secretion of the dye, so that any toxic substance present would probably reach a fairly lethal concentration capable of damaging the tubular epithelium.

I trust that these references may be of some use to those investigating this problem.—I am, etc.,

HUGH MILLER,
March 31. Surgeon Lieutenant, R.N.V.R.

Volume of Transfused Fluids

SIR,—Prof. H. A. Harris, writing in the *Journal* of March 29 (p. 491), comments upon the treatment of air-raid casualties described in a recent paper by Bywaters *et al.* (*Journal*, March 22). He objects in particular to the volume of fluid injected, and makes a plea for peace, quiet, rest, and non-interference in the resuscitation of the severely injured. While all will agree with the first three, the last, if it means withholding the benefits of early and rapid fluid replacement, will entail the loss of many lives, as anyone will testify who has watched the almost magical return from the apparently moribund of severely shocked casualties treated by rapid transfusion of blood and plasma. This was illustrated most forcibly by a recent case.

A flight lieutenant sustained very severe multiple compound fractures of both legs below the knees at 11.30 p.m. Morphine and first aid were given on the spot, and he arrived in hospital at 2 a.m. after a ten-mile journey over country roads. He was then grey, cold, sweating, almost pulseless, blood pressure ? 30. Transfusion, warmth, further morphine, and oxygen

by B.L.B. mask were immediately started, and his subsequent course was as follows:

Time	Fluid 1 bottle = 540 c.cm.	B.P. Systolic	Pulse Rate	Transfusion Rate
2 a.m. ..	—	?30	—	
2.15 a.m. ..	Plasma 1 bottle ..	70	150	Given rapidly
2.30 a.m. ..	Blood 1 ,, ..	85	145	Great improvement in colour and temp.
3.15 a.m. ..	Blood 1 ,, ..	95	145	
4.30 a.m. ..	Plasma 1 ,, ..	110	140	Fast drip
7.30 a.m. ..	Blood 1 ,, ..	90	130	
10.30 a.m. ..	Blood 1 ,, ..	120	135	Slow drip
12 noon ..	Plasma 1 ,, ..	120	130	

He was then considered fit for operation, which consisted of rapid excision of his extensive wounds, local application of sulphapyridine powder and vaseline gauze, and closed plaster, under nitrous oxide and oxygen. Bleeding was not marked, but there was a progressive fall in blood pressure to 85. Transfusion was continued with blood as a fast drip:

Time	Fluid	Systolic B.P.	Pulse Rate	Transfusion Rate
1.00 p.m. ..	Blood 1 bottle ..	85	150	Fast drip
6.00 p.m. ..	Plasma 1 ,, ..	120	145	Slow drip

The transfusion was then stopped; oxygen was given continuously throughout the day. Next day he was remarkably well, blood pressure 135 (his normal pressure is 140), but pulse rate still 140. Ten days later he was still progressing favourably, but as his haemoglobin was then 45, a three-bottle slow-drip transfusion of fresh blood was given.

This case illustrates the following points: (1) The value in severe shock of immediate massive transfusion. He had 2,700 c.cm. of fresh Group O blood, and 2,160 c.cm. of (pooled) plasma—a total of 4,860 c.cm. in sixteen hours. (2) The importance of controlling such transfusions by serial blood-pressure readings. (3) The unreliability of the pulse rate as an index of recovery from shock. (4) The number of donors involved in the treatment of a single severe casualty—in this case approximately twenty. (5) The enormous loss of fluid which must take place in severe multiple injuries. The patient described is slightly built, weight 10½ stone, and his normal blood volume cannot have been more than about 5,500 c.cm. If he bled 2,000 c.cm. at the time of injury, and a further 500 c.cm. at operation, the remaining 2,300 c.cm. represented plasma loss into the traumatized areas. It is my experience, and that of others (Whitby *et al.*, 1941), that the usual volume of fluids required to resuscitate the severely shocked is approximately four bottles (2,160 c.cm.), and the case described is atypical in that the patient required more than double this amount.—I am, etc.,

W. WYNNE WILLSON,
Captain, R.A.M.C.
April 25. Army Blood Transfusion Service.

Treatment of Burns

SIR,—Dr. E. C. Dawson, Mr. C. C. Holman, and Dr. George Adam (April 19, p. 602) raise questions which are ever present in the minds of those of us who are working on burns.

I do not think it can be too frequently stressed that so far as treatment is concerned burns fall into two main categories. The first category consists of those in which there is partial skin destruction only. Regeneration will occur under any method of treatment, and it is only necessary to avoid the infliction of further damage by either coagulation or the frequent repetition of adherent dressings. For this class of burn, therefore, there would appear to be no particular argument for or against the use of paraffin wax, vaseline packs, adhesive tape, or even plaster. Some of these substances will not be applicable in all areas and none of them appear to me to be ideal. In the treatment of burnt hands conservation of joint function is so essential that particular care must be taken to avoid any method which limits joint movement, and up to the moment it seems certain that the best method of treatment consists in the use of saline baths. This also presents technical difficulties which may prevent it from being universally applicable. A more perfect treatment would, I think, be a completely elastic, occlusive, antiseptic dressing which could be easily applied and, if necessary, easily removed. It should not interfere with epithelial regeneration and should be sufficiently stable to remain in place without protection for at least ten days. These desiderata sound simple, but there are many technical difficulties which I hope will be shortly overcome.

The second category of burns is that in which skin destruction is complete. If the area is small any method will allow slow centripetal regeneration. If the area is large this cannot be expected to occur and grafting will be necessary. Our aim is to do this at the earliest possible moment to prevent fibrosis and to conserve function. None of the older methods of treatment will provide a clean, relatively sterile area for grafting purposes, and here again we realize the need for new methods. Under the occlusive treatment by plaster-of-Paris or adhesive tape, I find sterility is never reached, though the bacteriology may, after initial changes, become constant.

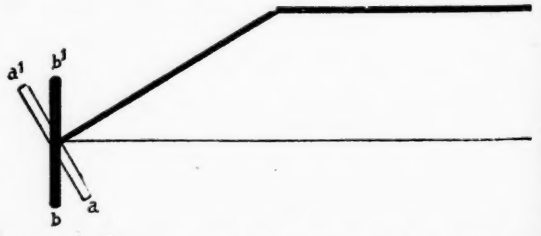
Your correspondents will have noted that I have said nothing about tannic acid. Perhaps it has its place in some burns in the first category, but even in this class experience leads me to believe that its potentialities for danger, if applied to the hands or face, are very great. If it is used for the second category of burns it cannot be expected to succeed, since it depends for its separation upon epithelial regeneration, which we know will not occur. The only alternative methods whereby it may be removed are either subjacent sepsis or surgical interference. One further point against its use is that most of us find ourselves quite incapable of deciding within the first few hours the exact degree of any burn. This is not evident for some days, and if tanning is to be delayed until that time most of its advantages will have been lost and it will be subject to the greater probability of subsequent sepsis.

So many divergent views have recently been expressed that it must be obvious that no ideal method of treatment for burns is yet available. At the beginning of the war opinions were more or less standardized but were based upon civilian injuries. Further experience and increasing knowledge lead me to believe that a satisfactory solution has yet to be found. I have hopes that this may not be long delayed, and in the meantime would suggest that only innocuous substances which will not vitiate any final treatment should be used for first-aid purposes.—I am, etc.,

London, W.1, April 22. RAINSFORD MOWLEM.

A Thomas Splint Modified to Braun's Type

SIR,—It was very interesting to read Mr. J. C. R. Hindenach's note (April 12, p. 558) on the use of a bent Thomas splint in lieu of a Braun splint for fractures of the tibia. Having used a Thomas splint instead of a Braun splint on these lines for the past two years I can fully recommend its merits. Not only is it an ideal form of splint for the treatment of fractures of the tibia requiring traction, but it can also be employed with advantage for those fractures of the femur in which the upper fragment is flexed and for which a Braun splint is usually advocated. This applies in particular to fractures of the upper third of the shaft. In the treatment of these the "bent" Thomas splint is an improvement on the Braun splint because when used with "fixed" traction (alone or combined with weight traction) it immobilizes the upper fragment and enables the patient to move his pelvis (for the



use of the bed-pan, etc.) without pain. This is not possible when a Braun splint is used, for in this case any movement of the trunk is accompanied by movement of the upper fragment since its immobility is dependent on weight traction only.

One modification of the Thomas splint should always be made when it is bent at the knee. The ring should be tilted on the bars so that its plane lies at right-angles to that of the bars below the knee (see diagram). This will obviate two things: (1) undue pressure on the groin which would other-

wise result from elevating the splint; and (2) tilting of the splint from pressure on the lower half of the ring. It is then not necessary to allow for the ring to sink into the bed as described by Mr. Hindenach.

Finally it needs to be emphasized that whenever a Thomas splint is used with "fixed" traction (apart from its use as a purely emergency measure) the ring should always be a good fit.—I am, etc.,

Liverpool, April 19. G. E. THOMAS, F.R.C.S., M.Ch.(Orth.).

Wound Healing

SIR,—Your important leading article on problems in wound healing (April 12, p. 560) draws attention to the point that at long last some surgeons are alive to the fact that it is necessary for them to consider their patients both medically as well as surgically. For the healing of wounds of all sorts we have to remember that all we can do is to help Nature in her work of repair. The healing process is dependent on the health of the body cells, especially in the neighbourhood of the wound, though it is difficult, if not wrong, to think of the possibility of some of the cells of the body being healthy and others unhealthy.

You kindly allowed me on April 5, 1906, and July 15, 1906, to point out the value of lime salts—calcium chloride in medical wounds such as ulcers, and calcium iodide for ulcers of the legs, and, still later, calcium permanganate for ulcers of the stomach. The value of calcium salts is now fully recognized, though when I first advocated their use I was thought to have lime on the brain. Strangely enough, even to-day the value of iodine combined with calcium as calcium iodide is still not recognized as it ought to be, although it is tasteless, non-depressing, and does not produce iodism.—I am, etc.,

Swansea, April 15. G. ARBOUR STEPHENS.

Milk in Wartime

SIR,—One factor which has favoured the recent improvement in the public health is in jeopardy—the increased use of liquid milk. In this last month of March this country consumed 63,000,000 gallons of liquid milk, a record figure since the Milk Marketing Board has been in the saddle. It is almost double the initial figure. Milk in school, milk for nursing mothers and expectant mothers, milk for young children, and, in a different category, the consumption of milk in milk bars and with the morning porridge have all contributed to this result. It cannot be doubted it is especially beneficial at this time when other sources of "good" protein are reduced.

Yet it is just at this time the Minister for Agriculture speaks of reducing the numbers of cattle in the country and of reducing each class of cattle proportionately. That is to say, it is suggested that in-calf heifers, and young cows in their first lactation, shall be reduced in proportion, as well as the veterans of a number of lactations. The reason for reduction, of course, is the diminished amounts of feeding stuffs imported. I would respectfully submit the following considerations as seeming to warrant a modification of this policy:

(1) The shortage of imported foodstuffs for cattle may prove, in the long run, an unalloyed blessing—that is, if our dairy farmers plough their grass, in their rotation, and grow their cattle feed as their forefathers did. There is a growing realization that all is not well with a system based on foreign feeding stuffs, and that disease, rampant when they are used, is negligible in herds fed on the produce of our own soil. I assume high tillage. Let me give an instance of what is possible. A large-scale dairy farmer, curtailed in his supplies, from the docks, of cake and so forth, ploughs up old park land with a doormat-like turf, turns it under, ploughing deep: and at the same time, to counter both acidity and wireworm, salts the land with 5 cwt. of salt per acre. Then he sows with oats and beans. What a magnificent crop results! How his cattle relish it! His neighbours, used to monoculture, have their eyes opened to the advantage of the Oriental system of mixed cropping. And the beans provide oil which we had almost come to think must be bought from abroad.

(2) Would it not be wiser to encourage some such policy and at the same time to make any reduction that must be made in the head of dairy stock in the older milch cows and such as are the subjects of doubt and anxiety? The late Prof. Delépine used to say that infection was conveyed by the older cows: even if the young had contracted disease, it had not had time to reach an infectious stage.

Anyhow, by all means, let us maintain the high supply and high popularity of liquid milk.—I am, etc.,

Holmes Chapel, April 21. LIONEL JAS. PICTON.

Discission of Secondary Cataract

SIR,—The value of an effective mydriatic in making the lens capsule taut, and therefore easing its discission, is rightly stressed by Mr. F. E. Preston (April 19, p. 609). But the one certain means of dealing with an elastic capsule, or any capsule for that matter, is the use of two Bowman's needles thus:

The patient lies on his back. The eye is anaesthetized. The speculum is inserted. The capsule is illuminated by a focal beam. The operator wears binocular magnifiers. He stands behind the patient's head. The eye is fixed by forceps at III on the clock face. One needle is pushed through the sclero-corneal margin at IX o'clock. The capsule is tested. If it be elastic the fixation forceps are put down and the eye held by the one needle only. Then the second needle is inserted at III o'clock. Both needle blades are now in the anterior chamber. The capsule can be held by one needle and cut or torn by the other; or it can be twisted and torn away from its adhesions by rotating one needle over the other. Good control means less pull upon the eye.—I am, etc.,

Crockham Hill, April 21. N. BISHOP HARMAN.

Continuous Pentothal Anaesthesia

SIR,—I have been interested in two recent letters on this subject, one by Dr. R. Hastings Moore (March 22, p. 462) and the other by Dr. Geoffrey Organe (April 5, p. 535). In view of these, and following two personal cases, I venture to offer a further letter on the subject.

1. *Fibrillation of Muscles.*—This is rarer with pentothal than with evipan, and may often be avoided by warming the fluid and allowing it to stand for two to five minutes before injecting. It also helps to avoid restlessness during induction and recovery.

2. *Sudden Muscular Contraction.*—This may occur in spite of muscular relaxation being present, and is more especially seen in vulvar, bladder, and perineal operations, stimuli from which evoke strong reflex responses.

3. *Very Shallow Breathing and Cyanosis.*—I strongly endorse all these authors have to say concerning inexperience in the use of these drugs, and in the measures which should be at hand for resuscitation. My two cases will help to stress this point.

4. *Persistent Coughing.*—I have found that over-rapid injection with the presence of mucus in the pharynx often causes this. The value of premedication is well seen here. I am aware that others say that too slow an injection is the cause of these symptoms and of parasympathetic overactivity—namely, coughing, sneezing, and hiccup. I agree with Dr. Organe in saying that in these cases the injection is better discontinued after 1 gramme (20 c.cm. 5% solution) has been injected, and the subject considered unsatisfactory for this form of anaesthesia.

5. *Severe Laryngeal Spasm.*—This is undoubtedly the result of a surgical stimulus which has evoked a reflex response in the presence of too light a level of anaesthesia. It is closely related to point 2. Stretching the anal sphincter requires a deep level of anaesthesia, and for this reason I consider most cases of "haemorrhoids" are unsuitable for pentothal. A spinal anaesthetic is pre-eminent in this sphere of surgery. Except for out-patients and the aged, I always favour light premedication before injecting these quick-acting barbiturates.

Case 1.—This occurred soon after I had qualified. I was asked to anaesthetize an old cachectic man of 70 for the removal of radium needles from the throat. Recalling the original estimation of dosage for evipan, I injected 1 c.cm. every fifteen seconds until consciousness was lost. Observing this quantity to be about 5 c.cm., I forthwith injected the remaining 5 c.cm. Following the removal of the needles I was horrified to find the patient black in the face and not

breathing. Fortunately his heart and circulation remained active, so that artificial respiration, intratracheal O_2 and CO_2, and intravenous coramine saved him. This lesson happily occurred early enough for me to realize the dangers of this technique and to study closely the indications and contra-indications for the drug.

Case 2.—Here I was an onlooker. A house-surgeon employed the above method of dosage for excision of a papilloma on the chin of an anxious man of 68 admitted direct to the theatre from "out-patients." Here respiration ceased following marked uncorrected cyanosis, and was followed soon after by cessation of the heart beat. All the above resuscitative measures, as well as intracardiac puncture and cardiac massage, proved unavailing. It may be stressed here that intravenous coramine is a waste of time in the absence of a heart beat. Nothing short of intracardiac puncture with subsequent cardiac massage and continuous endotracheal oxygen with artificial respiration will be of any avail.

In view of these two cases it is important to read carefully the full literature as supplied by the makers of these barbiturates, or that found in the textbooks, and not to rely solely on the small paper pamphlets which can be found inside the cartons containing the ampoules. It is a regrettable misfortune when a fatality occurs to an out-patient or for a very minor operation. Regarding these two cases, I am aware that both failed to do justice to a recognized technique of dosage.

The "biological" dosage scheme was introduced by Lauber. Maintaining a constant rate of injection, the patient is made to count, and thus the moment is noted when consciousness is lost. Then if the patient is young and strong, as much again is injected for short operations, and twice as much for a long operation. If the patient is old or cachectic then half as much again is injected for short operations or one and a half times as much for a longer operation.

This clearly indicates that in the two cases reported this method was misused, and therein lies the danger. A method such as this may be misunderstood, or one of its points not correctly grasped, by the anaesthetist. The result is totally unfair to the drug and serves to bring it or the entire group of short-acting barbiturates into undeserved disrepute. It is better to gauge the dose *during* the injection by careful observation of the patient.

Concerning the safety factor of these drugs, an early investigation of 6,500 cases showed eight deaths, a mortality of 0.123%; another series of 20,000 gave twenty-two deaths, a mortality of 0.11%. Although figures may be misleading, this is alarmingly high, and is probably due to over-rapid injection—misuse of method—and poor selection of patients.[1] My reason for recording these two cases is simply to warn the inexperienced or over-confident of the unforeseen dangers which lie in the administration of these drugs. These dangers lie in the extreme ease with which they are injected and produce their results.

The question, "How long does pentothal last?" or "How much shall I give?" requires a very careful answer, depending on a number of conditions. The dosage for each case must be considered individually and due modification made according to circumstances. This is true for the controllable inhalation anaesthetics. How much more true, then, for the so-called "uncontrollable" anaesthetics? The recognition of these conditions and the administration of the appropriate dose constitute the art of the anaesthetist. There can be no rule of thumb to be adhered to in every case. The dose is dependent on the metabolic rate; the age, sex, and weight of the patient; the type and extent of the proposed operation; and the presence or absence of premedication.

With the old method of dosage it is easy to administer an overdose to a debilitated subject without realizing it for a little while. The circulation is slow and depressed and the signs of anaesthesia are delayed. The additional amount may prove to be just double the minimum dose required for the operation. For very short minor operations in healthy subjects adequate anaesthesia is obtained by injecting 5 or 6 c.cm. (0.3 gramme 5%) of pentothal rapidly. This gives time for a tooth extraction or for an incision and drainage. The anaesthesia is transient and deep. Twice this dose in the same patient given slowly over two to three minutes might not even produce unconsciousness. For longer cases the technique which appeals to me, and which I have used without a fatality in 250 cases, is similar to that described by Prof. Macintosh.[2] Estimation of dosage and minute-to-minute control are carried out during the injection by very careful observation of the patient. The mind must not be allowed to concentrate solely upon the barrel of the syringe. The patient has to be watched for loss of consciousness, cyanosis, and relaxation; finally, the site of injection must be observed to avoid extravenous deposition of fluid. Two to three c.cm. is injected in ten to fifteen seconds, followed by a thirty-second safety pause to watch the effects. Further quantities are then injected, having regard to the various conditions mentioned above. Usually I give a further 3 or 4 c.cm. in half to one minute.

Unconsciousness supervenes during, or at the end of, the first safety pause, and relaxation occurs generally after two minutes have elapsed from the start of the injection. The surgeon should be asked not to make any preparation or incision until the full two minutes have elapsed. This will avoid a sudden momentary jerk or even continued restlessness during the operation. The presence of surgical anaesthesia is judged not by the rate but by the shallowness of the respiration. Providing safety pauses are made further quantities are injected, and 1/2 to 1 c.cm. every five to ten minutes is all that is necessary to maintain even anaesthesia. These safety pauses are highly important, and constitute the method of control of dosage as well as obviating any dangers that may arise from retarded circulation or extravenous injection.

These drugs are best given in the recumbent posture and not in the sitting or reversed Trendelenburg positions.—I am, etc.,

W. M. MAIDLOW, M.R.C.S., D.A.

Bristol Royal Infirmary, April 14.

[1] Hewer, C. Langton, *Recent Advances in Anaesthesia and Analgesia*, 1937, p. 112.

Successful Adrenal Graft in Addison's Disease

SIR,—I think most clinicians would hesitate to regard any case of Addison's disease as "indisputable," particularly when, as in the case reported by Drs. Katz and Mainzer (April 26, p. 617), there was no pigmentation either in the mouth or elsewhere, and the symptoms had been present for ten years or more.

Low blood pressures, by which I mean a systolic pressure under 100 mm. Hg, are not very uncommon even in healthy adults, and occur much more often in the asthenic type of invalid described by the authors. Without wishing to stress in any way the value of laboratory findings in the diagnosis of Addison's disease, there does not appear to be any evidence from biochemical investigations to support the diagnosis. Possibly a better title for the paper would have been "Grafting of Adrenal Gland in a Case of Suspected Addison's Disease."—I am, etc.,

London, S.E.1, April 28. J. J. CONYBEARE.

Acute Abdominal Pain after Opium Medication

SIR,—Mr. H. P. Winsbury-White, in his letter under the above heading (March 22, p. 461), asks for other practitioners' experiences, and I venture to report a case which occurred last week. A man of 35 with a comminuted fracture of the leg was given morphine sulphate 1/4 grain hypodermically, and within ten minutes he was seized with violent colicky abdominal pains. He writhed about in bed; he resented palpation of the epigastrium; and I could not help wondering if he had a perforation. There was no vomiting, and the pain passed off in about an hour.

Case No. 4 in Mr. Winsbury-White's series was relieved by atropine; but the case here reported had already received 1/100 grain of the latter drug some twenty minutes previously in anticipation of a general anaesthetic. The dosage of morphine here was not large. Had I not seen Mr. Winsbury-White's letter I should have been even more puzzled at the onset of pain after morphine than I actually was.—I am, etc.,

Crewe, Feb. 15. E. MARCUS LIDDLE.

[2] Macintosh, R. R., and Pratt, F. B., *Essentials of General Anaesthesia*, 1940, pp. 147, 148, 26.

Vitamin B_1 in Diphtheria

SIR,—We have read with interest Dr. Hugh Climie's letter (April 12, p. 572) on vitamin B_1 in diphtheria. We suggest that his cases are of very doubtful value in the elucidation of the value of vitamin B_1 in diphtheria, especially as he apparently has not checked his results by controls.

He states that "there would appear to be need for further investigation into this subject, but the use of vitamin B_1 in cases of severe diphtheria would seem justifiable to ensure complete oxidation of the large quantities of glucose usually given to such cases." We would like to bring to Dr. Climie's notice the following. Prof. Peters and his colleagues[1] have shown that vitamin B_1 is important in the later oxidation changes of glucose, and if this vitamin was deficient an increase of pyruvic acid could be demonstrated in the tissues of the blood of experimental animals. Peters and Cunningham[2] carried out a series of analyses on normal guinea-pigs bled to death. Another series of guinea-pigs were inoculated with four minimum lethal doses of diphtheria toxin and estimations of pyruvic acid were made on the blood taken shortly before death. The figures for the injected animals showed no appreciable deviation from the normal figures. They then attempted to produce the chronic form of the disease by injecting toxin and later concentrated antitoxin. Their results on these animals also showed no significant deviation from the normal. The muscles of some of both the normal and the injected animals were tested qualitatively for pyruvate: the reaction was always negative, except in one or two isolated cases. They followed up their animal experiments by clinical ones and demonstrated that the percentage of pyruvic acid in the blood of two severe cases of diphtheria suffering from paralytic sequelae showed no considerable alteration from the normal. These two workers concluded their article with the statement that "it is thus obvious from the experimental and clinical results that the stage of glycolysis in which vitamin B_1 is concerned is not affected by the diphtheria toxin, and no benefit arises in this condition from its administration."—We are, etc.,

G. E. DONOVAN,
Public Health Dept., Gorseinon, Swansea.
MURIEL BANNISTER,
April 21. The Royal Infirmary, Worcester.

Cause of Appendicitis

SIR,—I have only just seen the letter of Dr. J. Price Williams (November 2, 1940, p. 612). He notes that appendicitis is a disease characteristic of the last half-century, and while he rejects the idea that it is due to meat-eating, he implies by his reference to castor oil that constipation is an important factor in its causation. It is interesting to note in this respect that around 1890 white bread came into general use, and as a result the average daily intake of vitamin B_1 in England fell from about 1,000 I.U. (from all foods eaten) to 300 I.U.[3] The minimum daily intake for health is estimated at from 300 to 600 I.U.,[4] while 646 has been recommended.[5] Animal experiments suggest that a deficiency results in diminished tone of the non-striped muscle of the intestine, and a supplement of B_1 has been recommended in the treatment of constipation.[6] The retention of faecal matter in the caecum, assisted by gravity, would seem to provide the ideal condition for the development of appendicitis, especially if there is atonia. If this is so, beriberi should be associated with a high incidence of appendicitis, other things being equal. But they are not. The beriberi of rice-eating countries occurs where consumption of meat and other foods liable to rapid putrefaction is relatively very small.

The likelihood that appendicitis is largely due to the combination of a critically low intake of vitamin B_1 and a fairly large amount of animal protein and too little "bulk" seems sufficient to justify investigation. If steps are taken to ensure adequate supplies of B_1 in the nation's diet by encouraging the widespread use of wholemeal flour, or at least the fortified loaf, together with the effect of meat rationing, it is possible that the number of appendicitis cases may fall significantly. It would be interesting to know if any figures are available.—I am, etc.,

St. Andrews, April 16. F. L. ROBERTSHAW.

SIR,—Your excellent *Journal* is of necessity read in this remote place some months after publication. In your issue of October 12, 1940 (p. 505), I read with growing consternation a letter on the cause of appendicitis by Dr. Josiah Oldfield. That such treatment is practised and such views held in these enlightened times is to my way of thinking little short of astonishing. Admittedly many reputable surgeons still administer large doses of anti-gas-gangrene serum in cases of acute appendicitis complicated by rupture, but I have yet to see this application of Dr. Oldfield's theory do any good.

One agrees with Dr. J. Price Williams (September 14, 1940, p. 367) that the cause of appendicitis is trauma, but surely the trauma is not always in the cradle. If Dr. Oldfield took the trouble to brush up his anatomy he would find that the appendix, in respect of its blood supply, is divided into thirds, and that at operation any of these thirds may even be gangrenous while the other two appear quite normal; surely the steak was not just one-third bad which in its caecal putrefaction caused this catastrophe. Again, how does he explain the acute appendicitis which occasionally complicates enteritis, when the passage of food through the intestine is often distressingly rapid? Appendical pain is not always caused by appendicitis; only to-day I removed an appendix which had caused its owner severe pain, and yet it was normal except that it contained a coprolith—obviously a case of appendical colic comparable to that caused by a stone in the ureter.

Every case I see convinces me that the cause of appendicitis is traumatic, inasmuch as the trauma is to the blood vessels, first causing engorgement, by venous interference, and oedema (the white stiff appendix) and later anaemia, by arterial interference, and gangrene. At this point the organisms from the much-maligned caecum begin their invasion. When one argues why this vascular trauma should occur deeper waters are reached. Far be it from me to state that diet, and with it more or less habitual constipation, have no part—most probably they are the exciting cause of the trauma by interfering with the relative position of the meso-appendix.

Dr. Oldfield's treatment with its enemata, long fasting, and castor oil is even more drastic and uncomfortable than an operation with little or no disturbance of the other abdominal viscera. In this country we favour the muscle-splitting incision, and the resulting harm to the abdominal wall is practically *nil*. I am neither a long-intestined frugivore nor a short-intestined carnivore, but Heaven preserve me from a colectomy so that I can exist on modern food.—I am, etc.,

Darwin, N.T., Australia, Jan. 9. C. LELEU.

"Heat Convulsion"

SIR,—The following case of "heat convulsion" may be of interest to some of your readers, as it presents a number of unusual features.

A male aged 18 was admitted to hospital with an acute osteomyelitis of the left tibia. He had a temperature of 104.6° F. and a pulse of 80. His general condition was good. Operation was decided upon, and I ordered 1/4 grain of morphine pre-operatively. Anaesthesia was induced with gas-and-oxygen, using a Coxeter apparatus and employing partial rebreathing from the outset. No ether was given at any stage. At the beginning of induction he became a shade cyanosed, but this was rapidly relieved as anaesthesia became well established; at no other time did cyanosis occur. He was perspiring very freely and secreting copious quantities of saliva, which poured from his nose and mouth. In an effort to control this fluid loss he was given 1/50 grain of atropine. The operation had been in progress only about twenty minutes when I noticed twitching of his facial muscles, accompanied by clonic movements of the arms and legs, which had to be held down by the theatre-room staff. The theatre was hot (80° F.); the patient's temperature had risen to 105° F. and his pulse to 180, while his respirations became irregular. Pus

[1] *Lancet*, 1936, **1**, 1161.
[2] Ibid., 1937, **1**, 563.
[3] Prof. J. C. Drummond and Anne Wilbraham, *The Englishman's Food*.
[4] *Lancet*, August 3, 1940.
[5] Sir John Orr and David Lubbock, *Feeding the People in Wartime*.
[6] L. S. P. Davidson and Ian Anderson, *A Textbook of Dietetics*.

had been located and the tibia was about to be trephined. A Phillips airway was inserted and 6 litres of oxygen with 1 litre of carbon dioxide per minute was administered in an effort to regulate his breathing. As the continued administration of this mixture had little effect in arresting the development of the convulsion I thought it desirable to give a few c.cm. of pentothal. The convulsion began to wane after only 2 c.cm. had been injected, and had entirely ceased with 4 c.cm. The operation was continued for about another thirty minutes; but there were no further convulsions in the theatre or subsequently in the ward, neither did his condition give rise to any anxiety. On being returned to bed he was given a rectal saline, followed by a continuous intravenous drip saline.

The interesting features about this case are: (*a*) it resembled very closely the so-called "ether convulsion," yet at no time was ether administered; (*b*) the convulsion developed shortly after giving a large dose of atropine; (*c*) the patient's temperature was very high, he was toxic, and in addition the theatre was hot, ventilation being almost non-existent owing to the black-out; (*d*) the operation had been in progress only a short time, the patient was inclined to be lightly under, and his colour was good; (*e*) oxygen and carbon dioxide had little effect in arresting the condition, which was readily stopped with a small dose of pentothal.

In my opinion this was a heat convulsion entirely due to hyperpyrexia aggravated possibly by the heat of the theatre plus the toxic condition of the patient.

I am indebted to Wing Commander R. Thorpe, senior medical officer on the station, for permission to publish this case.—I am, etc.,

March 26. S. E. OSBORNE.

Medical Planning Commission

SIR,—If the views expressed in the letter from Dr. Genge printed in your issue of April 19 were his alone it were best ignored and left to a speedy and a kindly oblivion. But his letter is written on behalf of the Medical and Panel Committee of an important county borough, and if we are to believe that these are the considered opinions of a representative group of general practitioners, then indeed mischief is afoot.

It is common ground that doctors wish to place their skill at the service of their fellows and that they wish to do so under reasonable conditions, both financial and administrative. It is common ground that the present confusion in the medical services of the country causes grave dissatisfaction in our profession and robs the community of service urgently needed.

Most of us look to the Medical Planning Commission to make proposals the effect of which would be to unite the profession in rendering improved service to the community. But not so Dr. Genge. Myopia and delusions of persecution unhappily combine to make him wish to fling the general practitioners into a war on three fronts—against medical officers of health exercising insufferable powers, against consultants casting envious glances, and against a third foe not so clearly defined who is to be overthrown by loud shouting. So impatient is Dr. Genge for the battle to begin that he cannot wait to hear what the Commission has to propose. So intent is he on victory that he does not pause to consider that in such a war the good name of our profession and the service of the public would both be casualties. It is a sad case occurring in a localized epidemic. Prompt reflection should prevent spread.—I am, etc.,

Potters Bar, April 23. MAITLAND RADFORD.

SIR,—Criticism levelled against the Medical Planning Commission has been the consequence of lack of information, and the feeling of misgiving much lessened by the timely letter of Mr. H. S. Souttar (April 12, p. 569). Had it been written at the time of the announcement of the Commission one would have felt that, although the Executive was acting within its rights constitutionally, the terms of reference were not quite so purposeless as at first appeared to be the case. For surely the terms of reference are quite contrary to the purpose of the Commission as implied by its name, Medical *Planning* Commission.

The Commission as constituted, with facilities at its disposal for comprehensive inquiry, is quite capable of discovering why medical reforms are necessary. Further, from a review of the situation in this and other countries, and of methods of reform previously suggested, practicable alternative proposals for future adoption may be made. But in what respect is this inquiry made necessary by the circumstance of war?

I suggest that this is the proper limit of the scope of the Commission. Therefore it would be well for the Commission, at its first session, to make an authoritative announcement upon its interpretation of the terms of reference. Precision in this respect will ensure a happy environment so far as that is dependent upon the good will of the profession in general.—I am, etc.,

MAURICE WIGFIELD.

Watton-at-Stone, near Hertford, April 26.

Medical Man-power

SIR,—We have heard a great deal lately about the acute shortage of medical personnel. Will anyone courageously publish the facts? For when the facts and the truth are published there is evidence of maldistribution, muddle, and rapacity.

The G.M.C. informed me a year ago that the number on the *Medical Register* was approximately 64,500; this included aged, infirm, retired, and women practitioners. Recently qualified will make this number up to (allowing for death) about 65,500. Of these, I understand, approximately 36,000 are normally engaged in practice in England and Wales. The Services (by which we really mean the Army, as the Navy and Air Force are small numerically in comparison) would like to have, apparently, about one medical officer to every 250 fit and healthy young men; hence for 3,000,000 about 8,000 to 12,000 medical officers, the remaining 42 millions of population being left with the balance, about 24,000 to 28,000 medical practitioners, for all the other services—civil, general practice, consultant, E.M.S., and so on!

Approximately half the Army medical officers are engaged in administrative, clerical, and office duties; the other half who are doing clinical work (so-called), for the most part in the United Kingdom, only treat minor maladies, all serious cases being transported to the local hospitals in their districts. Hence this horde of Army medical officers are not even dealing with, nor have they in many instances the equipment with which to treat, anything like all their cases. At home the Army is rapacious, desiring the lion's share of the nation's limited medical personnel, and having taken these thousands of medical men, for the most part at £450 per annum in a rank and status equivalent to that of a sub-lieutenant R.N., aged 20 years, they do not even do their own work!

It is obvious where combing is required. In many areas general practitioners are being worked to death. What has happened to the thousands of consultants and general practitioners from denuded areas, whose practices have virtually disappeared?—I am, etc.,

CHARLES A. H. FRANKLYN, M.D., M.R.C.S.

Oxford, April 14.

Malarial Therapy for Epilepsy

SIR,—In view of Dr. G. de M. Rudolf's letter (April 26, p. 647) and your annotation on the treatment of G.P.I. (March 29, p. 486), the following extract from Dr. O. C. Gruner's translation, para. 228, p. 171, of "The Canon of Medicine" (Avicenna, A.D. 980–1037) might prove of interest:

"Some diseases turn into new ones and so themselves disappear. This is very satisfactory. One disease becomes the medicament for curing another. Thus quartan malaria often cures epilepsy (cf. G.P.I.), also podagra, barices and arthralgias. A spasmodic disease may be cured by scabies, pruritus and furunculosis. A certain type of diarrhoea is cured by inflammation of the eyes. Lienteria cures pleurisy. Bleeding piles removes atrabilious disorders, including sciatica, renal and uterine pain. But the passage from one disease to another may be a serious matter; for instance, when an empyema spreads into the substance of the lung and when meningitis becomes lethargia."

Dr. Rudolf, in his book, mentions the Hippocratic reference to the effect of malaria on epilepsy.—I am, etc.,

London, W.1, April 26. M. B. RAY.

The "English Disease"

SIR,—In Dr. H. M. Raven's letter (*Journal*, April 19, p. 606) there appears a remark that, though it is not strictly germane to the current controversy about calcium requirements, I should like to be allowed to correct, because it is frequently met.

Rickets was not called the "English disease" because it was particularly characteristic of English children, but because in 1650 Francis Glisson, then holding a Cambridge chair, published the first detailed and accurate description of the disease. From this it derived on the Continent of Europe the appellation quoted by Dr. Raven, but given by him, as by so many other writers, an incorrect and misleading interpretation that is unfair even to our curious climate.—I am, etc.,

Greenford, Middlesex, April 22. A. L. BACHARACH.

Obituary

F. GRIFFITH, M.B., and W. M. SCOTT, M.D.

Medical Officers, Ministry of Health

The scientific staff of the Ministry of Health suffered a severe loss last month when Dr. Frederick Griffith and Dr. William McDonald Scott were killed by enemy action. They had long worked together in the Ministry's laboratory in London, and their reputation as bacteriologists was very high.

Dr. Griffith, younger brother of the late Arthur Stanley Griffith, M.D., of whom Sir Arthur MacNalty wrote an appreciation in last week's *Journal*, received his medical training at University College, Liverpool, graduating M.B., Ch.B. of the Victoria University in 1901; he took the D.P.H. of Oxford in 1910. After serving as house-physician and house-surgeon at the Royal Infirmary, Liverpool, he worked in that city as Alexander Fellow in Pathology at the Thompson Yates Laboratory, a post formerly held by his brother, and the two were associated as scientific investigators under the Royal Commission on Tuberculosis, carrying out researches of the first importance. Frederick Griffith was a member of Gray's Inn, and for many years past had been a medical officer of the Local Government Board and later of the Ministry of Health, working in the pathological laboratories from 1911 onwards.

Dr. McDonaid Scott was an Edinburgh student, graduating M.B., Ch.B. with first-class honours in 1905, B.Sc. (Public Health) in 1907, and M.D. in 1910; he took the D.T.M. & H. in 1906. He held the Ettles scholarship at the University of Edinburgh, and afterwards the John Lucas Walker studentship in pathology at Cambridge, where he was for some years university demonstrator in pathology. Before joining the laboratory staff of the Local Government Board he had been a medical officer in the Straits Settlements Medical Service. On the establishment of the Ministry of Health in 1920 he became one of its medical officers. McDonald Scott was the author of articles on bacteriology and immunity in the *Encyclopaedia Medica*, and on influenza and anaphylaxis in the Medical Research Council's *System of Bacteriology*. He also wrote an important report in 1916 on meningococci occurring in the spinal fluid and similar micro-organisms in the nasopharynx.

S. GILBERT SCOTT, M.R.C.S., D.M.R.E.

Consulting Radiologist, the London Hospital

We regret to announce the death on April 19 at his home in Bourne End of Dr. Sebastian Gilbert Scott, for many years director of the radiological department at the London Hospital and radiologist to the National Hospital for Diseases of the Chest, and latterly honorary radiologist to the British Red Cross Clinic for the Treatment of Rheumatism. He belonged to a family that has produced famous architects and good doctors; his grandfather was Sir George Gilbert Scott, R.A., his younger brother is Sir Giles Gilbert Scott, R.A.

He was born at Hampstead on January 31, 1879, and was educated at Beaumont College, Windsor, and King's College, London, qualifying M.R.C.S., L.R.C.P. in 1904. After serving as house-surgeon at King's College Hospital and house-physician at the Royal Free Hospital he took up *x*-ray practice and returned to King's, working there as clinical assistant in the electrical department until his appointment to the post of radiologist at the London Hospital in 1909.

During the last war Gilbert Scott was radiologist to the Princess Beatrice Hospital for Officers, the Palace Green Officers' Hospital, and the Military Hospital at Broadstairs. After the war he was appointed consulting radiologist to Queen Alexandra's Military Hospital, Millbank, and a member of the Army *X*-ray Committee. He was a past-president of the Electrotherapeutic Section of the Royal Society of Medicine, and held office in the British Medical Association as president of the Section of Radiology and Electrology in 1923, as chairman of the Westminster and Holborn Division 1932–3, and as a member of the Committee on the Causes and Treatment of Arthritis. He took the D.M.R.E. at Cambridge in 1921 and afterwards examined for that diploma. He published many papers on radiological subjects in this and other journals; his *Atlas of Chronic Rheumatic Arthritis (the Hand)* appeared in 1935 and his *Radiology in Relation to Medical Jurisprudence* in 1931. During recent years he took much practical interest in the work of the Charterhouse Rheumatism Clinic and in wide field *x*-ray research under a benefaction from Lord Nuffield.

JOHN SMYTH MACDONALD, F.R.S.

Sir ARTHUR HALL writes:

I should like to add to your recent obituary notice a personal tribute, not only to the work of Macdonald as a physiologist whilst in Sheffield but also to the important part he took in helping us to obtain a Charter for the University. When he was appointed as professor of physiology in 1903 we were still but a University College. The three Colleges of Victoria University had but recently dissolved partnership. Liverpool had already obtained a separate Charter, Leeds was applying for one. With this the recent hopes that Sheffield might one day join Victoria University as a fourth constituent had vanished. To those who had set their hearts on University status for Sheffield Macdonald was a great stimulus. Coming to us direct from Liverpool he was not only familiar himself with the procedure necessary in applying for a Charter but was able to secure for us the personal co-operation of those of his former colleagues and friends who had recently gone through it themselves. The University of Sheffield owes much to his and their help and guidance in those early days. He was entirely responsible for planning the Physiology Department in the University buildings, a department which at that time was one of the best in the country. Besides being the first to hold the chair of physiology in the University, he was Dean of the Faculty of Medicine for several years until he left us in 1914 to succeed Sherrington at Liverpool.

Dr. E. FRETSON SKINNER, an old student of Prof. Macdonald's, sends the following personal tribute:

The physiology department of the Sheffield Medical School, as it then was, and of which he had charge, had an atmosphere of workaday enthusiasm that was stimulating to a degree, and every student who passed through Macdonald's hands must have absorbed and carried away something of his exuberant vitality and purposefulness. He had a true simplicity and kindliness of character, and I never heard him say an unjust or even an unkind word of anyone, not even of one who had done him a grievous hurt. Whatever subject he discussed he brought to it an original touch, and even the simplest routine laboratory experiments under his hands were made to have a real meaning for us. He had a boundless enthusiasm and made those who worked with him participants in it. He would devote hours or days to a single experimental detail, and though keen to fit it into a system of ideas, if it worked

out wrongly he would unhesitatingly discard it and start afresh. Besides possessing a friendliness that endeared him to his juniors, Macdonald was a real teacher. Among other efforts he made to cultivate interest in his classes was that of asking senior students to take a special item in a subject, read it up, and then deliver a lecture to their class-mates. It was indeed a novel idea and could only have succeeded under one who inspired enthusiasm, but it was enjoyed and appreciated by the class. The Sheffield Medical School and the Medical Faculty of the University owe much to his enthusiasm and originality.

"C. M. S." writes: In the obituary notice of Dr. DAVID FORSYTH your correspondent "M.B." says that hospital work afforded no scope for the psycho-analytic therapy in which he excelled. With this one cannot disagree, but it should be amplified to the extent that his hospital work certainly enabled him to treat most successfully the milder cases of neurosis that were often admitted to his wards. And, what is possibly of equal importance, those of us who had the privilege of serving Forsyth as house-physicians were given a lasting sympathy with those unfortunately grouped as neurotics—and an ever-increasing understanding of the vital importance of psychology. Forsyth was blessed with great gifts, among them a highly developed clinical sense. Although for many years his main interests were psychological, he kept fully abreast of modern developments in medicine, and gave every encouragement to his H.P.s to try out any new treatment. His ward rounds attracted large numbers of students and his bedside teaching was noteworthy for clarity of expression. We shall miss him for many things, but above all perhaps for his never-failing urbanity and sympathetic hearing of any difficulty, professional or personal.

It is with regret that we note the death of Dr. BERKELEY ROBERTSON, after a short illness, on April 13. Dr. Robertson, who was 60 years of age, was born in Glasgow, educated at Glasgow Academy and Glasgow University, where he graduated in Arts and Science before taking his medical course. He graduated M.B., Ch.B. with commendation in 1904, and then spent a year in house-surgeonships in the Royal and the Western Infirmaries. He belonged to a family noted in Glasgow for its great interest in the Church and in foreign missions, and it seemed natural that he should determine upon medical missions as his life's work. He was appointed to Livingstonia Mission, where he gave notable service in ophthalmology as well as in the other departments of that great mission station. After three and a half years, however, anxiety for his health demanded return home and he was advised to relinquish service in Africa. He settled in practice in the west end of Glasgow and became a noted and esteemed family doctor. In 1912 he took the D.P.H. of Cambridge, and in 1919 he graduated M.D. in Glasgow. Dr. Robertson was of a genial happy disposition, greatly liked by his patients and by his fellow practitioners. A keen Churchman, he took great interest in Church affairs, especially in relation to foreign missions, and was a conscientious member of Session in his own church and a knowledgeable representative of the Livingstonia Mission in the General Assembly. He had a cultured mind, and was well read in theology, philosophy, and poetry. Much sympathy is felt with Mrs. Robertson and her family, one of whom, her son, is beginning the study of medicine at the University of Glasgow.

Dr. GORDON STEWART WOODMAN, who died suddenly on April 15 at Llandudno, was born at Haltwhistle-on-Tyne on January 12, 1891, and was educated at Dollar Institution and the Medical College of Durham University at Newcastle. He graduated M.B., B.S. in 1913 and took the F.R.C.S.Ed. in 1920. At Newcastle he was house-surgeon and junior resident medical officer at the Royal Victoria Infirmary, and then served in India and Mesopotamia with a temporary commission in the R.A.M.C. After the armistice he was civil surgeon at Iraq for a year and then surgical specialist to the new general hospital at Baghdad and surgeon to the Iraq Petroleum Company. For a time he was also director of the surgical unit and professor of clinical surgery at the Royal Hospital, Baghdad. Returning to this country he settled in general practice at Llandudno, and was appointed gynaecologist to the Llandudno District Hospital and the Heroes Memorial Hospital at Blaenau-Festiniog. Dr. Woodman joined the B.M.A. in 1920 and had been honorary secretary of the Mesopotamia Branch, which he represented at the Annual Representative Meetings of 1926 and 1930.

Dr. THOMAS LEATHARD WORMALD, medical officer since 1920 to the Darlington Rural Council, died on April 14. He was born at Prudhoe-on-Tyne on March 9, 1885, and was educated at Darlington and Newcastle, graduating in medicine at the University of Durham in 1906; he took the B.Hy. degree and D.P.H. in 1909, and the M.D. in 1910. Dr. Wormald was the first full-time medical officer to be appointed by the old Darlington Board of Guardians; this was in 1911, after he had been senior assistant medical officer to the Newcastle-on-Tyne workhouse infirmary for three years. During the last war he served with the R.A.M.C. in France at No. 6 General Hospital, in a field ambulance, and as battalion M.O. For the past ten years he had been obstetric physician to the Darlington General Hospital. He joined the British Medical Association in 1909.

News has been received of the death through enemy action of Dr. PETER RUSSELL CAIRNS and his wife, of Southport. Dr. Cairns, a native of Galashiels, was educated at the Old Galashiels Academy and the University of Edinburgh. He qualified L.R.C.P. & S.Ed. and L.R.F.P.S.Glasg. in 1893. For a number of years he was in practice at Southport in partnership with his brother, Dr. Lawson Cairns, and retired from active work some ten years ago. He had been a member of the British Medical Association from 1896 until the time of his retirement.

The following well-known medical practitioners have died abroad: Dr. G. E. VINCENT, president of the University of Minnesota, 1911–17, and of the Rockefeller Foundation in New York, 1917–29, aged 76; Prof. CARLOS G. MALBRAN, the first occupant of the chair of bacteriology at Buenos Aires University; Dr. PEDRO OVIDIO BOLO, vice-president of the Academy of Surgery of Buenos Aires; Dr. DAVID RIESMAN, formerly professor of clinical medicine in the University of Pennsylvania, and a prolific writer on pathology, medicine, and medical history, aged 73; Dr. EUGEN ENDERLEN, successively professor of surgery at Basle, Würzburg, and Heidelberg, aged 67; Dr. KATE CAMPBELL MEAD, born in Quebec, author of *A History of Women in Medicine*, and formerly president of the International Association of Medical Women, aged 73; Dr. WILLIAM MILES WISHARD, sen., emeritus professor of genito-urinary surgery at the Indiana University School of Medicine, aged 89; Dr. LUDWIG MAYER of Heidelberg, author of works on hypnosis and psychotherapy, aged 48; Dr. HANS GUDDEN, formerly director of the Munich Psychiatric Clinic, aged 73; Dr. CHARLES V. CHAPIN, an eminent epidemiologist who was for forty-seven years medical officer of health for the city of Providence, aged 85.

We are asked to correct the obituary notice of the late Dr. ERIC SNELL which appeared last week (p. 655) by adding that his younger son, Flying Officer E. Peter S. Snell, is also following in the medical tradition of the family and has been a medical officer in the R.A.F.V.R. since last summer.

The annual report of Crichton Royal Institution, Dumfries—the one hundred and first—gives the number of patients under treatment at the close of the year as 1,043, of whom 675 were private. In addition there were 141 patients who had been evacuated from Edinburgh Mental Hospital. The physician-superintendent, Dr. P. K. McCowan, says that among the new admissions it is noteworthy in how few the breakdown can be traced to the war and its attendant anxieties. The reaction of the hospital population to the war varies according to their mental condition. A certain number are so much out of touch with reality that the war means nothing to them, a few weave delusional ideas around it, while the remainder regard it with the same mixture of intelligence and ignorance as the general population. Two cases of schizophrenia following head injury have been treated with insulin at the institution. Both patients seemed doomed to a life of chronic mental invalidism, and both are now living useful lives in the outside community. In another case of schizophrenia electrical shock treatment and detoxication by surgical means, supplemented by occupation, recreation, and psychotherapy, brought about a recovery which would not have been attained by any of these means alone.

Medico-Legal

WRONGFUL DEDUCTION OF PANEL FEES

An insurance practitioner recently succeeded in an action against a county insurance committee for the payment of a sum which had been deducted unlawfully from his capitation fees. Before the deputy judge at Windsor County Court, Dr. H. Tudor Edmunds, of Slough, sued the Bucks Insurance Committee for £3 13s.[1] A satisfied patient, the manager of a firm in business outside the doctor's district, telephoned to the doctor to call and see three of the firm's employees who were ill. He did so, and no one told him they were insured persons. About a week afterwards, when making the entry in his daybook, this possibility entered his mind and he reduced his fees by a half, as he thought the patients might have to contribute some payment to the firm. It appeared later that two of them were insured persons. The firm paid his bill, but afterwards asked him to refund £3 13s., his charge in respect of the two insured persons. The insurance committee, without hearing the doctor, deducted this amount from his panel payments. Counsel for the committee suggested to the doctor when he gave evidence that, if he had known that these persons were insured and had treated them as such, he could not have expected a fee from the firm. He replied that a doctor was often called in to deal with the employees of a firm, rather than that the firm should each time summon the panel doctor of a sick employee. He was employed by two firms at Slough whose employees he treated for payment whether they were insured persons or not. Counsel submitted that the judge had no jurisdiction in this matter, because the committee was a semi-judicial body and the question was dealt with in the Medical Benefit Regulations. The judge held that he had jurisdiction. Giving judgment, he said the committee was not entitled to deduct this sum, for the contract under which the doctor was employed was with the firm and not with the insured persons. The patients did not pay, and they were not therefore entitled to recover or to ask the committee to refund the fee. It seemed to him a pity—as, in fact, counsel had admitted—that the committee had not dealt with the doctor more as a professional man should have been dealt with, and at least have heard what he had to say. If they set themselves up as a judicial body, nothing more unjudicial could have taken place. He gave judgment in favour of the doctor for the amount, with costs on the highest scale, in view of the importance of the case to the medical profession and insurance committees.

STATISTICS OF INFANTICIDE

In a paper read to the Medico-Legal Society Dr. J. C. Matheson, governor and medical officer of Holloway Prison, gave some interesting statistics with regard to infanticide. During the period of five years 1936–40 eighty-one women were admitted into Holloway charged with homicidal offences, and in thirty-six cases the victims had been infants under 12 months old. Dr. Matheson divided these cases into two groups: one for the period from the beginning of 1936 until June, 1938 (when the Infanticide Act of that year came into operation, repealing and re-enacting with modifications the provisions of the previous Act of 1922), and the other for the period from that date until December, 1940. During the earlier period seven of the women were charged at assizes with murder; during the second period, following the passage of the Act, no such cases occurred. The accused women were most commonly between the ages of 20 and 30, and there was no case over 40. Of those in the earlier period nine were married women, eight of whom had had children before, and eleven were unmarried, of whom only one had had a child before; of those in the later period six were married, four of whom had had children before, and ten were unmarried, one of whom had previously had a child. The age of the victims was in the majority of cases under one month. Eleven of the twenty mothers relating to the earlier period, and eight of the sixteen mothers relating to the later period, had made preparations for confinement; the others had made none. As for the mental condition of these thirty-six accused persons, ten had had a positive history of mental impairment, and twenty-six a negative. Dr. Matheson's conclusions were that the lactational period is more important from this point of view than the period of pregnancy and childbirth, and that very often an exhaustion psychosis becomes evident. Infanticide is relatively more common among the unmarried than among the married, and among primiparae than among multiparae. There appears to be no specially favoured method of killing the infant, any one of a large number of methods being employed, and a true amnesia is not common. He did not think that the Act of 1938 had brought about any increase in the crime of infanticide. [The Act of 1938 applies to the killing of "a child under the age of twelve months" instead of to a "newly born" child as in the Act of 1922; it also refers to the effect of lactation as well as of pregnancy and childbirth.]

[1] *Windsor, Slough and Eton Express*, Feb. 7.

The Services

CASUALTIES IN THE MEDICAL SERVICES

ROYAL NAVY

Surgeon Lieut.-Commander JOHN WIDDICOMBE OLIVER, R.N., lost his life at sea in March while serving in H.M.S. *Bonaventure*. He was 33 years of age and was the elder son of Mr. and Mrs. Oliver of Old Bosham. He was educated at Felsted School and won a scholarship to Guy's Hospital, qualifying M.R.C.S., L.R.C.P. in 1931. For a time he was resident medical officer at Ashford Hospital. He entered the Royal Navy as surgeon lieutenant in 1931, and was promoted to surgeon lieutenant-commander in 1937. He was just posted to the Royal Naval Hospital, Haslar, for six months, and then served two and a half years on the China station in H.M.S. *Falcon*, Yangtze Flotilla, and returned to England to the Royal Marine Infirmary, Chatham, until August, 1936, when he was appointed to the Royal Naval Hospital, Great Yarmouth. He joined H.M.S. *Bonaventure* in April, 1940. He had been a member of the British Medical Association for ten years. He leaves a widow.

ARMY AWARD

The Military Cross has been awarded to Captain Prithvi Raj Bali, Army in India Reserve of Officers (Medical), in recognition of gallant and distinguished services in the Middle East.

The October issue of the *Dental Record* contains an entertaining account of the notorious mountebank commonly known as Sequah, by the well-known dental antiquarian Mr. B. K. Townend, who has collected from various sources a considerable amount of information about this extraordinary man. The bulk of evidence, according to Mr. Townend, goes to show that Sequah was born in Cornwall about 1844 and that his real name was William Henry Hartley. After serving in the police force he emigrated to America, where he achieved considerable success with his remedies, though not so great as he subsequently did in this country. On his return to England he successively started three companies in the course of three years, and during the 'eighties and 'nineties acquired a considerable fortune. His activities were not limited to this country, but he visited Tangier and Egypt, where he carried on his performances under the name of Sikwa. Though best known for his extraction of teeth in the market place of towns and villages, which he carried out to the accompaniment of a band and dressed as an Indian chief, he also professed to cure chronic rheumatism, deafness, blindness, rickets, consumption, piles, and all incurable illness. He also probably acquired large profits from the sale of his medicines, the most famous of which were "Sequah Oil," "Prairie Flower," and "Swamp Root Medicine," as well as from a sale of booklets containing rhymes in advertisement of his medicines.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

In Congregation on April 26 a bequest was gratefully accepted from the executors of the late Charles Slater, M.A., M.B., formerly of St. John's College. This is a legacy of £4,000 to the University of Cambridge to be applied for purposes in any way connected with the teaching of or research work in medical science or any other science ancillary to medicine at the absolute discretion of the governing body for the time being of the University.

The following medical degrees have been conferred:

M.B., B.CHIR. (by proxy).—F. S. Jackson, T. W. Rowntree.

UNIVERSITY OF LONDON

The membership of Brigadier P. H. Mitchiner, M.S., F.R.C.S., as representative of the Faculty of Medicine on Convocation, who was due to retire on May 13, 1941, has been continued until May 12, 1942.

The following candidates have been approved at the examination indicated:

POSTGRADUATE DIPLOMA IN PSYCHOLOGICAL MEDICINE.—Helen Baker (with Mental Diseases (Psychiatry)). *Part A:* J. W. Affleck, A. A G. Clarke, Portia G. Holman, Barbara E. Woodhead.

UNIVERSITY OF ABERDEEN

At a graduation ceremony on April 3 the degree of M.D. was conferred on I. Sacks, and the Diploma in Public Health was awarded to R. F. Macdonald.

The following medals were also awarded: Fife-Jamieson Memorial Gold Medal in Anatomy: W. Burnett. Chanock Gold Medal in Anatomy: M. R. Milne. Lizars Gold Medal in Anatomy: G. E. Mavor.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

Election of Fellows

At a meeting of the Royal College of Physicians of London on April 23, with Sir Charles Wilson, President, in the chair, the following were elected Fellows of the College:

Stanley Wyard, M.D.Lond. (London); John Inkster, M.D.Aberd. (Middlesbrough); James Browning Alexander, M.D.Glasg. (London); Hugh Spear Pemberton, M.B.Liverp. (Liverpool); Edwin George Bleakley Calvert, M.D.Belf. (London); Alexander William Hendry, M.D.Aberd. (Aberdeen); Montague Maizels, M.D.Lond. (Maidstone); Thomas Howard Crozier, M.D.Belf. (Belfast); Frank Alexander Knott, M.D.Lond. (London); Clifford James Fuller, M.D.Oxf. (Exeter); Cyril John Polson, M.D.Birm. (Leeds); Robert Klaber, M.D.Lond. (Bishops Stortford); John Gerald Edward Hayden, M.D.Melb., F.R.A.C.P. (Melbourne); Robert Merttins Bird Mackenna, M.D.Camb. (Liverpool); Charles Percy Pinckney, M.B.Camb. (London); Swithin Pinder Meadows, M.D.Lond. (London); Andrew John Morland, M.D.Lond. (London); Francis Findley Hellier, M.D.Lond. (Leeds); Louis Philippe Eugene Laurent, M.D.Lond. (Basingstoke); Thomas Tennent, M.D.Glasg. (Northampton); John Guyett Scadding, M.D.Lond. (London); Norman Swift Plummer, M.D.Lond (Steyning); Ronald Wilson Fairbrother, M.D.Manch. (Wilmslow); Evan Jones, M.D.Lond. (London); Eric Hamilton Hudson, M.B.Camb. (London); Max Leonard Rosenheim, M.D.Camb. (London); Samuel Nevin, M.D.Belf. (London); Gordon Wilkinson Goodhart, M.D.Camb. (London); George Norman Myers, M.D.Durh. (Cambridge); Eric Frank Scowen, M.D.Lond. (London); Alfred Ernest Barclay, M.D.Oxf. (Oxford); James Frederick Brailsford, M.D.Birm. (Birmingham); Robert Montgomery Gordon M.D.Dubl. (Liverpool); and Noel Gordon Harris, M.D.Lond (London). George Cranston Anderson, M.D.Ed. (London); Gordon Roy Cameron, M.B.Melb., D.Sc. (London); Egbert Coleby Morland, M.D., F.R.C.S. (Aylesbury); and Major-General H. Marrian Joseph Perry, C.B., L.R.C.P. & S.I. (London), elected under By-law XXXIX (b).

Surgeon Vice-Admiral Sir Reginald Bond was re-elected representative of the College on the Professional Classes Aid Council. Dr. G. E. Ward was appointed External Examiner in Medicine for the Fellowship Examination of the Faculty of Radiologists.

Admission of Members

The following candidates having satisfied the Censors' Board were admitted Members:

Hector John Anderson, M.B.Camb., Desmond William Ronald Ashby, M.B.Lond., Colin Ross Baxter, M.B.St.And., Harold Williams Fullerton, M.D.Aberd., Lilias Margaret Patria Gairdner, M.B.Lond., Ian Mills Hall, M.B.Lond., Michael Redmond Hayes, L.R.C.P., Frederick Roland George Heaf, M.D.Camb., Cecil John Charles Guy Hodson, M.B.Lond., Arnold Langley Jackson, M.B. Camb., Bertram Alfred Edward Johns, M.B.Birm., Thomas Arthur Kemp, M.B.Camb., Anthony Arthur Gough Lewis, M.B.Lond., Ronald Charles Mackeith, M.D.Oxf., Maurice Nellen, M.B. Capetown, John Wylmer Paulley, Flying Officer, M.B.Lond., John Pemberton, M.D.Lond., John Lawrence Pinniger, M.B.Oxf., Mohammed Sadiq, M.B.Punjab, Dwijendra Bhuson Sen, M.B. Calcutta, John Rupert Squire, M.B.Camb., Euodia Davel Van Der Walt, M.B.Capetown, Alfred John Walker, M.B.Lond.

Licences and Diplomas

Licences to practise physic were conferred upon the following 171 candidates (including 14 women) who had passed the Final Examination in Medicine, Surgery, and Midwifery of the Conjoint Board and have complied with the necessary by-laws:

P. H. Abbott, G. C. Acres, R. A. Allen, M. W. Annear, Norah H. L. Armstrong, F. Barasi, R. F. G. Barker, J. S. Barr, J. Ll. Battle, J. W. R. Battram, C. L. F. Beaton, R. C. Bell, W. Black, P. H. Blackiston, D. V. V. Bowen-Jones, K. G. Bowker, A. C. Boyle, W. Ll. Brace, K. T. Brown, J. E. Bulow, H. C. Burbridge, H. C. Burnell, I. C. Campbell, L. S. Carstairs, Joan Cleland, Betty J. Clymo, R. C. Connolly, P. B. Conroy, H. Conte-Mendoza, C. F. Cooper, W. H. Craike, R. McK. Crichton, J. H. Crosland, P. S. Cuthbertson, R. Daley, P. G. Dalgleish, G. J. Ll. Davies, H. McI. Davies, B. W. Davy, T. Dean, R. M. de Gregory, W. P. Dick, R. G. Dickinson, C. F. Donovan, B. B. Downman, C. H. Dunn, J. R. G. Edwards, Margaret Edwards, J. J. Elkesas, B. Ellenbogen, F. Fessler, E. Finsterbusch, Elizabeth H. Flett, L. P. R. Fourman, H. D. Freeth, B. Galandauer, R. M. Galvan, L. A. Gibbons, N. W. Gill, Kathleen M. Gillett, N. Glas, N. F. C. Gowing, E. A. Grau, C. Greenwood-Penny, K. E. A. U. Ground, T. E. Hall, R. C. Hallam, G. J. Hardaker, D. H. C. Harland, S. Harrison, H. G. Helm, G. W. D. Henderson, R. S. Henderson, P. R. Henson, E. Hesselberg, R. D. Hoare, A. Holmes-Smith, H. Howard-Swaffield, H. B. Hyman, J. B. Ingram, C. J. R. Jacob, H. M. Jones, H. H. Khan, R. A. B. Kinloch, H. G. S. Korvin, W. S. S. Ladell, S. E. Large, J. B. Latto, R. R. Latto, T. E. Lamb, B. Lees, E. J. Leighton, H. M. Lewis, D. M. N. Longridge, T. H. McCall, J. G. McGavin, Lydia McMurdo, F. R. L. Makin, C. N. S. Manson, J. K. Martin, L. G. C. Martin, Margaret E. Matthews, J. Le F. Milburn, P. J. Miller, R. A. Moir, B. P. Moore, D. B. Morgan, A. B. Morrison, A. R. V. Moynagh, A. B. S. Mules, A. T. L. Norfolk, N. C. Norman, J. A. Oddie, Thora A. M. Oehlers, K. R. Ogilvie, L. J. Page, K. H. J. B. Parker, T. P. Pattinson, R. H. Percival, C. M. C. Potter, Dorothy P. Potter, B. S. Powell, G. C. Price, G. C. Purslow, P. A. B. Raffle, R. I. Randall, D. Ranger, J. Reiss, L. Rendell-Baker, J. L. Roberts, T. M. C. Roberts, P. J. Robinson, W. J. B. Rogers, M. S. Ross, B. Rowlatt, F. R. Russell, H. B. L. Russell, J. A. Sadler, R. G. Saipe, R. P. G. Sandon, R. D. W. Schofield, R. Sepson, P. C. Sharma, R. M. Sharpe, K. N. Sinha, P. A. J. Smith, R. A. G. Smith, T. H. S. Smith, C. C. Spicer, W. Spitzer, J. S. Stead, D. E. S. Steele, H. Sterndale, S. J. Sutton, J. H. Thompson, Edith M. Thorp, J. S. Tomkinson, S. E. Vincent, J. W. Warburton, R. S. Wathes, N. D. Wayne, Christine M. Weddell, D. N. White, Mary White, G. L. Whitmore, D. M. Wilkins, Betty M. Williams, J. Williams, M. H. Wostenholm, G. B. Wright, R. B. Wright.

Diplomas in Child Health were granted, jointly with the Royal College of Surgeons of England, to the nine candidates whose names were printed in the report of the meeting of the Royal College of Surgeons of England in the *Journal* of April 26 (p. 656).

D. W. Martin (*J. Pediat.*, 1940, **16,** 468) states that since 1935 eight cases of Rocky Mountain spotted fever in children have been treated at the Duke Hospital, Durham, N.C., as compared with only three cases in adults. Two were taken ill in June, four in July, and two in August—that is, during the season of greatest activity of the dog tick, by which the disease is transmitted. In five of the eight patients a history of tick bites was obtained, with the onset of symptoms from three to fourteen days later. The character of the disease varied from no symptoms except a rash and a temperature of 104° F. to delirium, coma, and a temperature of 105° F. The average duration of fever was fourteen days. Only one patient had a complication—gangrene of the nose. All recovered. The disease cannot be diagnosed from typhus by the Weil-Felix reaction, but can be differentiated by inoculation of guinea-pigs and biopsy of the skin lesion. Treatment is purely symptomatic. Although there are no reliable figures on the mortality of the disease in children, the mortality rate appears to be much lower than in adults, while the morbidity is much higher. As regards prevention, control on a large scale is impossible owing to the rapid rate of multiplication of the ticks and their extraordinary resistance. The vaccine prepared by the United States Public Health Service usually protects for a year and reduces the mortality, but its cost makes its widespread use impracticable.

Medical Notes in Parliament

Distribution of Medical Man-power

Responding to a request by Sir Henry Morris-Jones, Mr. BROWN on April 24 gave the recommendations of the Committee on the distribution of medical man-power between the several civil and fighting Services and general medical practice. These were:

(i) All medical establishments, Service or civil, should be reviewed forthwith with a view to the fullest possible utilization of medical personnel and the reduction of future demands.

(ii) The services of civilian practitioners in proximity to troops might be further extended.

(iii) Where the three Services in this country are represented in the same or adjacent areas, further economy should be effected by the adoption of the principle of area service.

(iv) The possibility of temporarily releasing practitioners from the Services for civilian work through the winter months when the demands of the civilian population are greatest should be carefully examined.

(v) The employment of alien practitioners admitted to the *Register* in civil hospitals and the Services should be further extended.

(vi) The employment of final-year students as house-surgeons or house-physicians in civil hospitals should be set on foot.

(vii) The question of the employment of more practitioners from the Dominion of Canada and other Dominions should be further explored.

(viii) The possibility of recruitment of practitioners from the United States of America is a new factor, and action in regard to it should be taken as quickly as possible.

(ix) An effective organization for the settlement of questions of priority should be established.

Medicine Stamp Duties Deputation

In the absence of Sir Francis Fremantle, Captain G. S. ELLISTON headed a deputation to Mr. Ernest Brown on April 22 on the Medicine Stamp Duties. Lord Horder, Lord Wolmer, Dr. Howitt, and Sir J. Graham Kerr were in this deputation. Its spokesmen pointed out that the removal of the duties would increase the advertisement, distribution, and display of proprietary remedies in small packets, encouraging self-medication in place of early treatment by medical practitioners or in the hospitals, sanatoria, and clinics provided by local authorities. Mr. BROWN promised careful consideration of the arguments of the deputation with a view to further discussion.

Disability and Deaths from Silicosis

On April 22 Mr. HERBERT MORRISON, replying to Mr. James Griffiths, issued the following table giving particulars of applications to the Silicosis Medical Board for certificates under the Various Industries (Silicosis) Schemes for Coalminers, 1940.

	Total	South Wales, excluding Anthracite Mines	Anthracite Mines
Disablement or Suspension:			
Number of applications for certificates..	957	353	472
Number of certificates granted:			
(i) Total disablement	185	91	71
(ii) Suspension (with partial incapacity)	282	78	189
Deaths:			
Number of applications for certificates..	137	84	32
Number certified as due to the disease ..	93	58	18

Shortage of Hospital Lay Staffs

Lord GREVILLE, in the House of Lords on April 23, asked what the Minister of Health was doing to see that the civilian staff of hospitals was made a reserved occupation. Staff, especially female staff, was being lost at such a rate that some wards in hospitals might have to be closed. The only people reserved apart from nurses and doctors were porters over 30, pharmacists at 25, and the assistant secretary at 30. The Minister of Health should approach the Minister of Labour. Among the many men and women now registering there should be categories unsuitable for munitions work, fire-fighting, and A.R.P., but willing to work in hospitals. If the Ministry of Health would draw attention to these vacancies in hospitals the services could probably be kept going.

Lord CROFT, in reply, said the Minister of Health had in mind the difficulties of hospitals in maintaining adequate male staffs. He kept in touch with the British Hospitals Association and the Ministry of Labour on the problem, but was bound to recognize that voluntary hospitals, equally with local authorities, must make their contribution of men to the Forces, and that both must employ women substitutes wherever possible. The Schedule of Reserved Occupations published just before Easter should allow ample time to train women substitutes or older men. By this Schedule hospital secretaries were reserved at 25 until Stage B was reached, when the reservation age was raised to 30, rising at Stage C to 35. For other administrative and clerical staff the age remained at 30 until Stage C, when it rose to 35. Individual cases of difficulty could still be considered on their merits. Similar consideration had been given to the subordinate grades. Hospital porters remained reserved at 30. Hospital orderlies were still reserved at the same age, and could only be recruited below it if required for similar work in the Forces. Lord Croft referred to the appeal made by Mr. Brown on April 3 for women to come forward for nursing duties. The registration of young women with the Ministry of Labour would also be used so far as possible for meeting the needs of those hospitals that were particularly short of domestic staff. Arrangements had been made for the hospitals to notify their needs locally to employment exchange managers. Women already employed in hospitals would be encouraged to stay there.

E.M.S.: Private Houses as Hospitals

Mr. K. LINDSEY asked on April 24 how many private houses had been set aside for hospitals. Mr. BROWN replied that under arrangements agreed with the War Organization of the British Red Cross Society and the Order of St. John of Jerusalem, 163 houses had been opened with 8,454 beds, and fifty-two more were in preparation with 2,531 beds as auxiliary or convalescent hospitals for the Emergency Hospital Scheme. In these houses 2,795 beds were at present occupied. Instructions to bring more beds into use were being issued. The usefulness of these hospitals did not depend only on the present occupancy of beds. They were required for relieving the main hospitals of suitable types of patients as and when the pressure on beds developed. Twelve houses had also been opened with 683 beds, and forty-four were in preparation with 2,459 beds, as annexes to existing hospitals. The occupancy of beds in these was pooled with the parent hospitals, and separate figures could not be given. In addition 9 houses, capable of providing 850 beds, were included in the buildings marked as reserved hospitals for use only in a serious emergency. All these figures related only to the Emergency Hospital Scheme in England and Wales, and did not cover other hospitals not in the scheme which made arrangements of this kind privately or premises used as sick bays or minor infectious diseases hospitals. Certain other buildings besides private houses were used or have been marked for hospital purposes.

Employment of Alien Doctors

In a reply on April 24, Mr. JOHNSTON, Secretary for Scotland, said Circular No. 2315 authorized the employment of doctors of enemy alien nationality at hospitals and similar institutions where members of the Forces received treatment. Mr. Herbert Morrison concurred in the terms of that circular, and, together with the competent military authority where necessary, was consulted on each individual case. Mr. Brown had adopted the same policy and procedure. In view of the heavy demands now made on British practitioners, Mr. Johnston was satisfied that no restriction was required which would prevent alien doctors practising in protected areas or other places where members of the Forces received treatment.

EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

The incidence of whooping-cough in England and Wales, generally throughout the country, showed a rise for the third consecutive week. This was mainly due to an increase in the prevalence of the disease in the urban areas. In Scotland the notifications showed a substantial decrease on the number for the preceding week. Fewer cases of diphtheria and scarlet fever were reported than in the preceding week, and in no area was there any violent fluctuation from the number of the previous week. The number of cases of cerebrospinal fever has been practically constant in England and Wales during the past four weeks, and no area has shown any considerable weekly variation. Two cases of typhus were recorded in Eire, from the rural district of Mohill, Co. Leitrim. The paratyphoid epidemic in the Highlands of Scotland is subsiding; the number of fresh cases reported during the week, 40, was less than half of the number notified during the preceding week.

Measles

The incidence of measles has risen considerably during the week under review, but the number of cases is below that recorded during some of the earlier weeks of the year. Compared with the previous week, increased notifications were recorded from Buckinghamshire, Essex, Gloucestershire, Lancashire, Lincolnshire, London, Suffolk, Surrey, Warwickshire, and Wiltshire. In the rural districts of Buckinghamshire the cases rose from 101 to 190; in Lincolnshire, Boston R.D., from 28 to 144; in Suffolk, Haverhill U.D., from 4 to 68; in Warwick, Birmingham C.B., from 396 to 593; in Wiltshire, Chippenham M.B., from 34 to 100. Contrary to the general experience of the country, the number of cases declined considerably in Dorset, from 349 to 182, and in Glamorganshire from 729 to 591—resulting from a fall in the incidence in urban areas. The increase in Scotland was due to the experience of Edinburgh and Glasgow, where 18 and 23 cases in excess of the preceding week were returned; but in Greenock a decrease of 26 occurred.

Dysentery

Although the total number of cases of dysentery was greater by 33 than that recorded in the preceding week, the general tendency was to a decline in incidence. The downward trend was disturbed by a violent outbreak in Hemel Hempstead, Herts, where 79 cases were reported for the first appearance of the disease in that area. This number was almost half the total recorded for the country. An investigation into the cause of this outbreak is proceeding, and all farms and dairies have been visited, as contaminated milk is suspected.

Trichiniasis

Rats have been found infected with the *Trichinella spiralis* in South Staffordshire, and the possibility of infection being spread by rats is being examined. Early in the year some 500 people were affected by this disease in Wolverhampton through, it is believed, eating raw sausage; but the actual source of infection was not established. There have been no fresh cases in the town during the past two months.

Typhus in Spain

Reports have been received that typhus fever is rife in several districts in Spain. The latest district to be affected is Algeciras.

Notifications of Infectious Diseases in England and Wales during the 26 weeks October–March, 1936–41

	1940–1	1939–40	1938–9	1937–8	1936–7
Cerebrospinal fever	6,138	5,432	734	721	588
Dysentery ..	2,902	1,130	1,007	5,451	644
Pneumonia ..	29,683	30,032	29,093	29,453	37,797
Diphtheria ..	31,608	21,451	32,754	41,970	32,149
Scarlet fever ..	38,647	30,284	45,995	63,406	48,411
Enteric fever ..	637	518	620	1,018	872
Totals expressed as a percentage of the mean of the three winters 1936–9					
Cerebrospinal fever	901	798	108	106	86
Dysentery ..	123	48	43	230	27
Pneumonia ..	92	94	91	92	118
Diphtheria ..	89	60	92	118	90
Scarlet fever ..	73	58	87	121	92
Enteric fever ..	76	62	74	122	104

A leading article on the incidence of epidemic diseases during the past winter appears at page 673.

No. 14

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended April 5, 1941.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (*a*) England and Wales (London included), (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	335	19	81	3	7	436	38	86	4	5
Deaths		2	2				4	9		
Diphtheria	939	48	245	20	31	711	19	228	45	16
Deaths	36	—	7	1	1	15	—	5	1	1
Dysentery	173	5	30	1		48	8	34		1
Deaths			—	—	—			1	—	—
Encephalitis lethargica, acute	4	—	1	—	—	3	—	—	—	—
Deaths		—	—				—	1		
Enteric (typhoid and paratyphoid) fever	19	2	45	1	—	29	4	36	5	—
Deaths	1	—	—	—	—	—	—	—	—	—
Erysipelas			47	8	4			61	11	4
Deaths			—				—	—		
Infective enteritis or diarrhoea under 2 years	—									
Deaths	30	2	6	10	4	31	4	7	7	7
Measles	15971	396	156		8	4,069	55	58		217
Deaths	24	1	2	—	—	3	—	—	2	6
Ophthalmia neonatorum	76	2	10	—	—	92	9	60	4	—
Deaths										
Pneumonia, influenzal*	1,177	52	18	8	6	951	56	9	12	21
Deaths (from influenza)	70	3	7	3	7	102	15	8	5	5
Pneumonia, primary ..			436	15				250	13	
Deaths		35		8	7		40		14	26
Polio-encephalitis, acute	—	—				—	—			
Deaths		—					—			
Poliomyelitis, acute ..	—	—	3	—	—	8	2	1	1	—
Deaths		—	—				—	—		
Puerperal fever	1	1	21			3	3	12		1
Deaths		—					—			
Puerperal pyrexia ..	111	5	10		1	141	11	8		—
Deaths										
Relapsing fever ..	—	—			—	—	—			—
Deaths										
Scarlet fever	1,137	67	131	39	31	841	36	138	32	66
Deaths	—	—	—	—	—	3	—	—	—	1
Small-pox	—	—	—		—	—	—	—		—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	2	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough ..	4,622	104	755		14	581	15	13		32
Deaths	36	1	22	—	—	3	—	—	1	—
Deaths (0-1 year) ..	414	19	133	33	25	442	40	94	29	41
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	5,207	620	859	211	191	5,564	912	766	216	201
Annual death rate (per 1,000 persons living)			18.7	14.0	16.7			13.9	14.4	18.8
Live births	4,890	372	924	366	254	7,009	1,103	944	386	262
Annual rate per 1,000 persons living ..			18.8	24.3	22.3			19.1	25.8	23.5
Stillbirths	207	11	37			310	57	35		
Rate per 1,000 total births (including stillborn) ..			39					36		

* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

Medical News

The address of the Chief Inspector of Factories is now Queen Anne's Chambers, 28, Broadway, S.W.1.

At the annual meetings of the Golden Square and Central London Throat, Nose, and Ear Hospitals, held on April 23, Lord Erskine of Restormel stated from the chair that arrangements were well in hand for completing the legal formalities of the amalgamation of the two hospitals. The committee had been greatly encouraged by the King's permission for the combined institution to be called the Royal National Throat, Nose, and Ear Hospital.

In place of the annual dinner the Society of Radiographers held a luncheon on April 26, when a company of nearly one hundred assembled under the chairmanship of Mr. C. W. Furby. The proceedings were overshadowed by the recent death of Dr. G. W. C. Kaye, who had been president of the Society since 1937; and many tributes were paid to him at the gathering. In proposing the health of the Society, Lieut.-Colonel D. B. McGrigor, President of the British Institute of Radiology, congratulated radiographers on the work they were now doing in many spheres, civil and military, at home and abroad. Mr. Furby, the acting president, responding, said that the Society was now between 1,300 and 1,400 strong. He thanked Mr. F. Melville for his devoted work as secretary. Mr. Cuthbert Andrews, in proposing the health of "The Guests," said that they included representatives from the branches and allied societies and members of the *x*-ray services of the United States and Canada who were in this country. Major Boulton Myles, honorary secretary of the British Institute, said that he was in command of the R.A.M.C. School of Radiography, which was seeking to instil into the people concerned sufficient knowledge to enable them to make intelligent use of the *x*-ray apparatus being issued to the Army Medical Service, and he counted himself fortunate in being able to enlist the Society's co-operation in this respect.

On April 23 the American Ambassador handed to the chairman of the Women's Voluntary Services for Civil Defence three cheques totalling £70,250 as a gift from the American Red Cross Committee in Great Britain. Of this sum £20,000 will be used to establish thirty more nurseries for children under 5 years of age, including £5,000 to establish convalescent homes for bombed children who are not fit to go directly to the nurseries. The nurseries were started by the Women's Voluntary Services at the request of the Ministry of Health. There are already forty-six war nurseries, maintained by a grant of £20,000 from the American Red Cross. Every effort is made to send only normal healthy children to the nurseries. A further £50,000 is to be used in establishing seventy nursery centres at a cost of £700 each and £250 for play and instructional equipment for the existing nurseries. These nursery centres provide skilled attention for small groups of evacuated children during the daytime, giving them social training and occupation, a midday meal, medical supervision, and healthy surroundings.

Lord Horder has been elected president of the Cremation Society in succession to the late Duke of Bedford. He will continue to act as chairman of the council. Last year the number of cremations was 25,175.

Dr. Kenneth William Cripps Sinclair-Loutit, medical officer, A.R.P. Casualty Service, Finsbury, has been appointed an M.B.E. (Civil Division) for brave conduct in civil defence, and the names of Dr. John Balfour Allan and Dr. Herbert Beaton Giles, Casualty Service, Lincs (Kesteven), and Dr. James Macpherson, medical practitioner, Westminster, have been brought to notice for brave conduct in civil defence.

Dr. Alfred William Lumsden Smith has been nominated as a candidate for the Parliamentary constituency of King's Norton, Birmingham, rendered vacant by the death in action of Major J. R. H. Cartland. Dr. Lumsden Smith describes himself as an "independent reprisal candidate."

At the annual general meeting of the Royal Sanitary Institute the Earl of Bessborough was elected President in succession to Lord Balfour of Burleigh, whose period of office had expired.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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QUERIES AND ANSWERS

Defect of Micturition

"EXILE" writes: The contrivance suggested by Dr. W. M. M. Jackson (September 7, 1940, p. 344) in response to the query of "Puzzled" (August 31, p. 306) may be avoidable. I am but 27 and have had this difficulty for as long as I can remember (diagnosis ?). Pressure over the bulb of the urethra, an unobtrusive manœuvre, should express these last few drops.

Income Tax

Use of House in Absence on Service

"J. H." is a partner in a firm of two; he is a bachelor, and a locumtenent is living in his house and carrying on his work. Can he deduct the whole of the cost of upkeep of the house or only the former one-third?

*** The house presumably serves the purposes of storing his furniture, etc., and providing a place of residence for him as and when he can use it or return to it. A claim to deduct the whole is therefore not a valid one. On the other hand, that part which is being used for the personal accommodation of his employee (the locumtenent) is now being used for the purposes of the practice, and a larger proportion than formerly is due. We suggest that a claim for two-thirds would probably be a reasonable compromise.

Payment to Wife for Assistance

"COUNTRY DOCTOR" has paid his wife £52 a year for over twenty years, "as she acts as my secretary, does my books and accounts, and is a trained nurse and attends to accidents and dressings." No allowance for this was claimed until this year. Can he now claim for past years?

*** Yes; a claim can now be made under the "error or mistake" provision (Finance Act, 1923, Section 24) for repayment of the excess tax paid for the five financial years 1934–5 to 1939–40. It will, however, be necessary to show that the £52 a year was paid to the wife *as remuneration for services*. In a case heard in the High Court in 1927 (Thompson *v.* Bruce) a refusal to admit a claim was upheld on the ground that there was no satisfactory evidence of such payments having been made.

LETTERS, NOTES, ETC.

Convulsions under Anaesthesia

Dr. W. MATHEWS (Barrow-in-Furness) writes: The following account of a case of so-called ether convulsions may be of interest. Male, aged 31 years, suffering from perforated gangrenous appendicitis, which began sixty hours before operation. Before operation the temperature (mouth) was 100° F., general condition apart from the abdominal trouble was good; he had morphine, 1/4 grain, and atropine, 1/100 grain, thirty minutes before operation. The anaesthetic was chloroform and ether in the proportion of 1:3 (open mask), changed to pure chloroform fifteen minutes after the operation began. Half an hour after the start of the anaesthetic convulsions began, first in the face and extending in a few minutes to the whole body. The patient became very cyanosed, and oxygen in a high concentration was given for about five minutes, with relief of cyanosis, but convulsions were becoming more violent. Sodium evipan, 5 c.cm., was then given intravenously in about one minute with immediate cessation of the convulsions. The patient was returned to the ward, and recovery from the anaesthetic was normal. The temperature thirty minutes after operation was 102.4° (axilla).

The temperature of the theatre was 80° F. The anaesthetic was not an orthodox one, but I think it suggests that ether is not the cause of these convulsions.

Rotary Pump in Intravenous Therapy

Dr. R. N. HERSON (Middlesbrough) writes: All the advantages claimed by Mr. G. M. Arnott for Riddell's rotary pump (April 5, p. 517) can be equally well secured by a much cheaper and simpler device. If to his short bent tube which passes through the rubber bung of a wide-necked bottle a pair of bellows is attached, the siphonage can easily be started (provided that his straight inlet tube is dispensed with). The bottle is then raised a few feet above the vein. The bellows can be removed once the siphonage is established. As occasion arises the bellows are reapplied and a little more air is forced into the bottle to speed up a sluggish drip. A suitable pair of bellows will be found in most hospitals as part of the sigmoidoscopic equipment. For the rest, all that is required are a bottle, pieces of glass tubing, rubber tubing, a drip chamber, and a cork. Incidentally, this method has the advantage over Riddell's pump in that the same pair of bellows can be used to start and maintain several transfusions at the same time.

Local Treatment with Sulphonamides

We have received from Pharmaceutical Specialities (May and Baker) Ltd. a pamphlet entitled "The Prevention and Treatment of Infection in Wounds by Sulphonamides," which reviews present knowledge of the effects of introducing sulphonamide compounds directly into wounds: twenty-eight references are given to original papers. It is concluded that this practice has some preventive but no curative value, that it should be reinforced by oral administration, and that in wounds involving nervous tissue it should be avoided. A copy of this publication will be sent by Messrs. May and Baker to any medical practitioner on request.

The Future of Dentistry

Mr. J. E. BOOKER writes on behalf of the Joint Planning Committee of Dental Students (c/o National Dental Hospital, Great Portland Street, W.1): There has been a good deal of discussion recently within the medical profession with regard to the post-war adaptation of medical services to meet the best interests of the community under the new conditions which must inevitably arise. This problem has seriously presented itself to the students of the dental profession, and a Joint Students Committee, representative of all the London dental hospitals, and later, we hope, to include representatives of all the provincial hospitals, was formed some weeks ago and held its first meeting on March 13. The primary object of the committee's efforts is to further in post-war Britain the best ideals of public service, and with this end in view to equip the future dental practitioner with a detailed knowledge of both the good, and in particular the bad, conditions existing in modern dentistry. Already a comprehensive schedule, consisting of one hundred and ten items under five subdivisions, has been prepared, and this, we believe, covers all the major and associated problems confronting the dental profession. Dentistry, in common with medicine, is a vital public health service, and as such we feel that no effort should be spared in mobilizing the great scientific developments which have taken place since the early days of the profession in order that they may be made available to every class of the community. We feel that, for the complete accomplishment of our ideals, absolute co-operation is necessary between the dental and medical professions. Our own programme involves a great deal of self-criticism, and we would welcome any suggestions in the nature of co-operation which the medical profession may wish to make. For our part we shall be pleased to keep in touch with any similar movement to our own which may exist now or in the future within the medical profession with a view to free interchange of ideas and suggestions. Such co-operation between students of the two professions would do much to create a complete and mutual understanding of the paths along which each profession must tread in common and those from which a divergence is necessary by the special nature of the work involved. We would like to see such divergent paths eventually running parallel, with wide channels of communication through which could pass swiftly details of modern research and technique. The British Dental Association has been approached, and has expressed its approval of the proposed activities of the Students Joint Planning Committee.

Elastic Stockings

Dr. W. M. M. JACKSON writes: Elastic stockings should be made to measure and not purchased ready-made. Makers who advertise in the *Journal* have experienced fitters and can be relied upon for fit and quality. It is not necessary to purchase the more expensive qualities. Care should be taken to assure that the stocking is quite loose at its upper free border. It should be put on in the morning before rising. This is best done with the leg and thigh elevated at right-angles to the recumbent trunk; this position ensures emptied veins. In order to extend the durability and elasticity of the stockings, duplicates should always be ordered. By wearing on alternate days they have a rest of a day or more to dry and retain their shape. They last longer kept unexposed to light. I have found it comfortable and convenient to change them before dinner in the evening. They are, of course, removed when the wearer is in bed.

National Union of Students

Mr. P. A. H. RIVETT writes from the Leeds School of Medicine: I should like to correct any erroneous impressions which may have been created by the note in the *Journal* of April 12 (p. 578) referring to the decision of the Middlesex Hospital Common Room Society to withdraw from the National Union of Students on the grounds that the activities of the medical subcommittee of the union "no longer retained their non-political character." It has been a source of regret to the National Union that the Middlesex Hospital has never been a member, and has thereby been unable to voice its opinion at or to participate in the discussions and decisions of council, the governing body of the union. It has long been felt that this situation is to the disadvantage of both parties, in that the union is deprived of the contributions of Middlesex and the hospital is unable to share in the control and privileges of the union. As the hospital has never been a member, however, the decision to withdraw means less than nothing. With regard to the so-called "political activities" of the medical subcommittee, since the society does not even trouble to send observers to its meetings it is somewhat difficult to understand upon what grounds this extraordinary view is based; I am convinced that it is an ill-informed and hasty judgment, and I challenge the secretary or any other member of the society to advance any evidence to substantiate the opinion of the society.

*** This question cannot be discussed further in the *British Medical Journal*.

A Monthly Gift to the Medical War Relief Fund

"NORTH WALES" writes: I have already made one small contribution to this Fund, but a few days ago I thought of a plan which may prove useful to others of my colleagues. I propose to call on my bankers this week and ask them to make a monthly payment of one half-guinea towards the fund, so long as I can do so. I shall not miss it by giving it in this fashion and, being a lucky one in an evacuated area, consider I should do more; by a monthly subscription I am more likely to give a larger sum in the long run. I hope this method does not involve too much clerical work for the good fellows concerned.

Ration Meals

Ration Dinners, a booklet on the lines of the B.M.A.'s *Doctor's Cookery Book* but adapted to war needs, has just been published by the Central Council for Health Education. It has been approved by the Ministry of Food; the instructions are simple and the methods advised are up to date. Under each recipe quantities are given for a family of four and for a canteen of 100 people. The booklet is attractively printed and illustrated, and may be obtained in bulk from the council's offices, Tavistock House, Tavistock Square, W.C.1, or from booksellers at 2d. a copy.

A Children's Rest Centre

Miss ANNA FREUD writes: In your issue of March 29 (bottom of p. 491) you mentioned that I have "opened a clinic in Hampstead . . . etc." This statement seems to be based on a misunderstanding. The house in question is no clinic but a Children's Rest Centre—that is, a place where bombed-out babies and children can find a home under favourable conditions. I should be grateful if you could publish this explanation.

Injuries from Lightning

Dr. F. R. HUMPHREYS writes from Langley Terrace, Oakes, Huddersfield: I should be grateful to any of your readers who would be kind enough to send me details of any cases of injury to human beings from lightning. War conditions make it difficult to get information. The information will only be used for statistical purposes in connexion with the Thunderstorm Census Organization.

Corrigendum

Dr. JAMES REID wishes to point out that in his article "Prothrombin Deficiency in Disease of the Liver" (*Journal*, April 19, p. 579) the method of calculating the prothrombin index was incorrectly stated. It should have read:

$$\text{Prothrombin index} = \frac{\text{Control prothrombin time}}{\text{Unknown prothrombin time}} \times 100,$$

this being the reverse of the formula as given by him.